

Covering the TI99/4A, the Myarc 9640 and compatibles

MICROpendium

Volume 4 Number 4

May 1987

\$1.50

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Spirit of 99

THE OFFICIAL NEWSLETTER OF THE CENTRAL OHIO NINETY-NINERS INC.

PUBLISHED MONTHLY IN COLUMBUS OHIO



PRESENTS

CHICAGO TIMES

CHICAGO TI-99/4A USERS GROUP
REALITY

HUNTER VALLEY 99'ERS NEWS

HOME COMPUTER



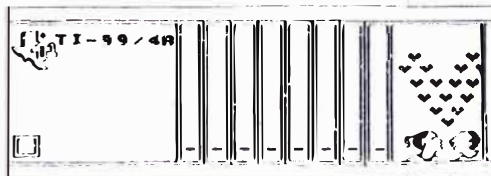
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COMPUTER GROUP

NEWSLETTER

VOL. 5 NO. 1

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Bulletin d'information de

MAURICIE 99

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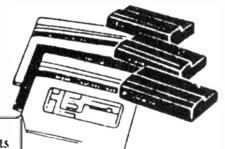
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John Koloen.....Publisher

Laura Burns.....Editor

Mack McCormick....Technical Editor

Coming next month

- More on Logo
- Updates to Freeware listing
- John Clulow on 4A DOS

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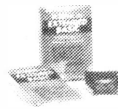
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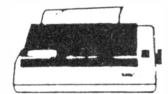
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Comments

First class rate goes up in June

You'll find our listing of TI user groups printed across five pages in this edition. We hope you find it useful. Most groups welcome new members and offer hobbyists a wealth of opportunities for technical as well as social contacts.

As a point of information, a number of active groups didn't send us any information about their activities. Don't let the length of a user group description be the only gauge in determining how active it is. The Chicago user group, one of the most active in the country with hundreds of members, gets only three or four lines in the listings.

FIRST CLASS RATES GOING UP

Sorry to say, but we're going to have to ask for a little more money for domestic first class and Canadian delivery of MICROpendium. The \$20.50 annual cost simply doesn't cover the 56 cents per issue it costs us to put it in the mail. By contrast, postage by third class mail is only 12.5 cents. The difference in cost between the two over the course of a year is \$5.22, even though we're charging only \$3.50 more for a first class subscription than a third class subscription. (Also, first class subscriptions are very popular and the numbers are getting to the point that we just can't keep on carrying the load.) Therefore, starting with the June issue, first class subscriptions will increase to \$22.25 per year. There will be no change in cost of a third class. As is our policy with previous rate increases, readers may renew now at the current first class rate. The new rate will go into effect with the publication of the June edition.

A NOTE TO CANADIAN SUBSCRIBERS

Starting immediately, we ask that Canadian readers pay for their subscriptions or other items from MICROpendium using postal money orders, international money orders or similar medium. Some Canadian banks are charging us \$10 to cash checks from Canadian subscribers, and our bank subsequently adds a service charge to that. In the future, we will return per-

sonal checks and ask that money orders be used instead. Our only alternative is to bill these excessive bank charges back to the subscriber. Despite months of inquiries, we have not been able to ascertain why these charges are being made nor why they are assessed in such an arbitrary fashion. We appreciate your cooperation on this since we have no choice in the matter.

HELLO FROM SISTER CITY

Thank you to Albert Anderson, secretary of the Hunter Valley 99ers in New South Wales, Australia, who sent greetings via the Australian radio announcers who recently visited Round Rock as a part of the "sister cities" program between it and Lake Macquarie City, which is in the greater Newcastle area served by the HV99ers.

P-CODE COMPILER FOUND

Those Post-it Note Pads are great for jotting down notes, but they're a bear to keep track of. Last month I asked the aid of readers in locating a p-Code compiler and linker for a reader in need. A reader has responded. Unfortunately, that Post-it note has disappeared. Will the reader who asked for the compiler and linker please give us a call so we can get you in touch with the person who has the compiler. (From now on, everything gets written on spiral note books.)

BENCHMARKS SOUGHT

Evaluating the Geneve isn't a job that can be done by one person. Anyone with a production model of the Geneve is encouraged to submit a list of likes and dislikes. List the programs it will run as well as the programs it won't. (We do not have the most extensive library of TI software in the country and thus wouldn't even be able to try many existing programs on the Geneve.) I'm not looking for reviews so much as a database of observations about this new computer. We'll compile and print these observations in the coming months to let other readers know what to expect from the computer.

—JK

Reviewed in MICROpendium

1984

February: B-1 Nuclear Bomber, Tandon TM-100 Disk Drive, Void, Beanstalk Adventure, Microsurgeon, On Gaming, Database 500.
March: Star Trek, Escape From Balthazar, Garkon's Getaway, Sky Diver, Mail-Call, Prowriter 8510 Printer.
April: Monthly Budget\$ Master, Budget Master, Home Budget, Thief, Donkey Kong, Khe Sanh.
May: Companion Word Processor, Q*Bert, Mad-Dog I & II, Programs for the TI Home Computer.
June: Creative Expressions Accounts Receivable/Accounts Payable, CDC 9409 Disk Drive, Starship Concord, Lost Treasure of the Aztec, ASW Tactics II.
July: Theon Raiders, Introduction to Assembly Language for the TI Home Computer, Game of Wit, Pole Position
August: TE-1200, Tower, Galactic Battle, Galaxy
September: Wycove Forth, 99/4 Auto Spell-Check, QUICKCOPYer, Wizard's Dominion, Anchor Automation Mk XII Modem
October: Killer Caterpillar, ZORK I, Defender
November: 9900 Disk Controller Card/Manager, Super Bugger, Transtar 1205 printer, Floppy-Copy, Data Base-X
December: Gravity Master, Data Base Manager System, Learning

99/4A Assembly Language Programming

1985

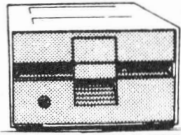
January: Super Sketch, Foundation Computing 128K Card, PTERM-99, TI-Runner
February: Super Extended BASIC, Beginning Assembly Language for the TI, ZORK II
March: Morning Star, Software CP/M Card, WDS/100 Winchester Disk Drive, Sketch Mate, BMC Color Monitor
April: 9900 Micro Expansion System, Disk + Aid, Gemini 10X-15X
May: Character Sets and Graphics Design, Draw 'N Plot
June: GRAPHX, DATA BASE I
July: Acorn 99, Advanced Diagnostics
August: Model Dow-4 Gazelle, TI-Artist, PC-KEYS, Not-Polyoptics' Bankroll
September: Midnite Mason, Myarc 32K/128K Card, GRAPHX Companion
October: 4A/TALK, Extende BASIC II Plus, XB Detective, Console Writer 2a
November: Foundation Z80A/80-column cards, 9900BASIC, Adventure Editor
December: Display Enhancement Package, Triple Tech

1986

January: BITMAC, Starcross
February: Night Mission, Peripheral Diagnostic Module, BA-Writer
March: Super Duper, Tunnels of Doom Editor, Business Graphs 99
April: U.S. Open Tennis, PRBASE
May: 4A Flyer, GRAM Kracker, Artist's Companion
June: Myarc Disk Controller Card, Maximem
July: Horizon RAMdisk, Old Dark Caves, Funlwriter, TI99/4A Macro Assembler
August: JOYPAINT 99, GPL Assembler, TI99/4A Intern, GPL Linker
September: Mechatronic 128K Card
October: TI-Forth Utilities, CorComp Memory Plus
November: Submarine Commander, PEP, MAX-RLE
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1987
January: MG DISKASSEMBLER, Myarc XBII
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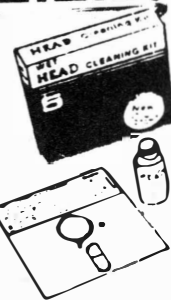
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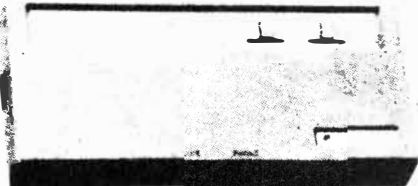
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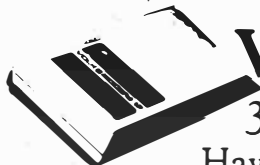
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Feedback

Monitor clarification

I am grateful to you and Mack McCormick for the favorable review of our RGB Conversion for the TI99/4A. The response has also been most gratifying.

I would like to clarify a point which apparently confused many readers. We do not make a Decoder Interface for TTL monitors which are sold everywhere for the IBM PC. These digital monitors conform to the RGBI protocol of the IBM CGA card and can only display eight saturated colors, namely the primaries, red, blue and green; the secondaries, cyan, yellow and magenta; and of course black and white. The TI99/4A video is analog in nature. That is, shades of color are internally generated which can only be displayed on an analog monitor.

It is possible to drive a digital monitor with analog video and such a display may be satisfactory for text-oriented computing such as word processing and spreadsheets; however, more colorful graphics programs will surely be disappointing.

Thomas F. Spillane
DIJIT Systems
San Diego, California

Power supply answer

In answer to Bill Freese (Feedback April 1987) regarding the half-height disk drives in the PE box, I have had two Teacs in mine for over two years without problems. As one who has been in the electronics field over 45 years, though not computer related, I find it impossible to believe that there would be a problem with the power supply. The fact that only one drive runs at a time also seems proof.

If you were to take the transformer that you need to any large electronic supply dealer, I believe that they could come up with a substitute for you. You might even find one at Radio Shack, which often sells ones for older computers. Incidentally, they often advertise TI goodies. I have spare keyboards, RF Modulators and computer power supplies. There is one thing about the power supplies; you know how the console gets so hot, well, these run cool, as they are heat sinked better. I have had mine in for about three years with no

problems. these TI items cannot be ordered, but must be gotten when Radio Shack has a special sale.

By the way, Bill, I fished many a time at Long Lake, north of Hillman, and always managed a visit to your fine city.

Glenn R. Lichtenwalter
Canton, Ohio

Finding the number to dial DELPHI

In my recent quest to sign onto the DELPHI information network a bit of detective work was required of me.

The first problem was that DELPHI does not have its own telephone numbers but uses Telenet or Tymnet services instead. How to find the local number? Since phone numbers for data lines are not listed one must get this information elsewhere. One source may be the local users group; another is Telenet customer service at 1-800-336-0437. I never was able to find a number for Tymnet.

Now the problem was how to sign on properly. The following prompts are on the Telenet service: **TERMINAL=** (for DELPHI enter D1); **@** (put C, space, DELPHI here); **USERNAME=** (your user name); **PASSWORD=** (your password). This puts you onto the DELPHI network. There is a bargain sign on available for TI users.

Steven Lisonbee
Orem, Utah

You could also have called DELPHI customer service at 1-800-544-4005; in Massachusetts, (617) 491-3393.—Ed.

Suggestion to user

Regarding Bill Freese's letter in the April 1987 issue, his problems aren't really too tough to solve except the power supply PCB. However, he won't need it if he carefully replaces the TO-3 case 12 volt regulator with a Sylvania ECG-933, as Jeff Shaw (and others) have suggested in the past.

This is a 5 amp regulator, and the two QumeTrack 142s I have running on my BBS have run for over a year with this modification. I have had bad luck with the RCA equivalent of this part and suggest

that the Sylvania part be purchased. I have done this modification twice for the Qume Tracks, and it works. Just be sure to configure the drives properly, and remove the resistor pack from DSK1. (Even this may not be needed; it seems to vary from controller to controller. Both resistor packs are in on one such system.)

As for the black keyboard, the keytops pry off easily. So if you have a need for black keys and can find only a beige keyboard, just switch the keytops. The keyboard is compatible in any case, although some look a bit different. You can get a 24 vac, 400 milliamp adaptor from JERRYCO at 601 Linden Place, Evanston, IL 60602, ph. (312) 475-8440; 400 ma ought to be plenty to fire up your TI modem.

You need to save the plug from your old ac adaptor to put on the new one, as it comes with just a bare wire end. It's stock No. 2736 and costs \$3.50. They have a \$10 minimum (including the flat \$3 s&h fee), but you might want to get a spare MBX head set, PE box power cord or 4A surge protector to make up the difference.

I welcome questions on my BBS also at (309) 353-9161, but, sorry, I can't return your calls. I do try to answer promptly on the BBS.

Mike Christianson
Pekin, Illinois

Rock Hopper praised

I wanted to write and tell you of how impressed I was with Rock Hopper in the January issue. Even though the basic idea was similar to Donkey Kong, there were numerous original concepts displayed in the execution. It was amazing how much action, variety and graphics were incorporated in a Extended BASIC game.

I demonstrated the game at our local user group meeting last evening and the audience was equally impressed.

I doubt that you can equal Rock Hopper again soon, but I hope that the amount of space such a listing requires will not deter you from giving us other games from time to time.

Bob Dudley
Coraopolis, Pennsylvania

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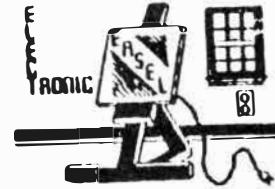
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BASIC

Factoring trinomials

By REGENA

I enjoy educational programming on the TI99/4A. I have probably written more than 150 educational programs for the TI, and the TI is still a popular computer for education for younger children.

Many readers have requested programs for older children. One of my *COMPUTE!* columns that generated a lot of mail response was the algebra tutorial (*COMPUTE!*, October and November 1984). Many people who wrote were glad to have an educational program for high school students and wanted more. This month I am honoring that request.

The first algebra program was a tutorial for binomial multiplication. This month's program is the reverse procedure, factoring trinomials into two binomials. This program offers practice in factoring. It is not tutorial but does have two explanation screens. If the student misses an answer two or three times, the correct factors are shown. Another problem of the same type is then given. If the answers are correct, the program advances to a different kind of trinomial. The first trinomial has all positive factors and no leading coefficients. The second trinomial has one positive and one negative factor and no leading coefficients. The third trinomial may have leading numeric coefficients and may have positive or negative factors.

The variables FLAG, FL and FK are used as flags for incorrect answers. A, B, C and D are the random factors chosen. The program actually starts with the binomials but prints the product for the problem. Lines 700-770 eliminate products that don't have a middle term and most products that have a common factor. Variables starting with the letter S pertain to the plus or minus sign. String variables are used to print the problems. CALL KEY is used to receive all answers. CC is the column number to blink a square while waiting for an answer.

If you prefer to save typing time, you may obtain a copy of this program by sending \$3, a stamped, self-addressed mailer and a blank cassette or diskette to Regena, P.O. Box 1502, Cedar City, UT 84270. Please be sure to specify the title "Factoring Trinomials" and that you need the TI version.

```
100 REM FACTORING TRINOMIALS
110 DIM S$(2)
120 CALL CLEAR
130 CALL CHAR(95,"10107C1010007C")
140 PRINT "## FACTORING TRINOMIALS ##"
150 CALL CHAR(94,"7048102078")
160 PRINT : "FACTORING IS THE REVERSE OF MULTIPLYING."
170 PRINT : "TO FACTOR A TRINOMIAL, FIND THE TWO BINOMIALS THAT WOULD GIVE THAT PRODUCT."
180 CALL CHAR(96,"00183C7E7E3C18")
190 CALL COLOR(9,11,1)
200 CALL CHAR(104,"FFFFFFFFFFFFFFFF")
210 CALL COLOR(10,7,1)
220 PRINT : "GIVEN TRINOMIAL"
230 PRINT : "  X^2 + 5X + 6"
```

```
240 PRINT : "FACTORS ARE"
250 PRINT : "  (X + 3) (X + 2)"
260 S$(0) = " - "
270 S$(2) = " + "
280 GOSUB 540
290 PRINT "  X^2 + 5X + 6"
300 PRINT : "1 WRITE FIRST-DEGREE FACTORS"
310 PRINT : "  (X   ) (X   )"
320 PRINT : "2 FIND FACTORS OF LAST TERM"
330 PRINT : "    6*1   1*6   3*2   2*3"
340 PRINT : "3 CHOOSE COMBINATION THAT WILL YIELD MIDDLE TERM"
350 PRINT : "  (X - 3) (X - 2)"
360 PRINT : "4 INSERT PROPER SIGNS"
370 PRINT : "  (X + 3) (X + 2)"
380 GOSUB 540
390 T=1
400 GOSUB 600
410 T=2
420 GOSUB 600
430 T=3
440 GOSUB 600
450 PRINT "CHOOSE:"
460 PRINT : "1 MORE FACTORING PRACTICE"
470 PRINT : "2 END PROGRAM": :
480 CALL KEY(0,K,S)
490 IF K=50 THEN 2210
500 IF K<>49 THEN 480
510 CALL CLEAR
520 GOTO 390
530 REM PRESSING ENTER
540 PRINT : "PRESS 'ENTER'";
550 CALL KEY(0,K,S)
560 IF K<>13 THEN 550
570 CALL CLEAR
580 RETURN
590 REM PRINT PROBLEM
600 RANDOMIZE
610 FLAG=0
620 FL=0
630 FK=0
640 PRINT "FACTOR:"
650 X$=CHR$(88+INT(3*RND))
660 A=INT(9*RND+1)
670 B=INT(9*RND+1)
680 C=INT(9*RND+1)
690 D=INT(9*RND+1)
700 IF (A=1)+(C=1) THEN 740
710 IF A=C THEN 660
720 IF (A/2=INT(A/2))* (C/2=INT(C/2)) THEN 660
730 IF (A/3=INT(A/3))* (C/3=INT(C/3)) THEN 660
740 IF (B=1)+(D=1) THEN 780
750 IF B=D THEN 660
```

(See Page 12)

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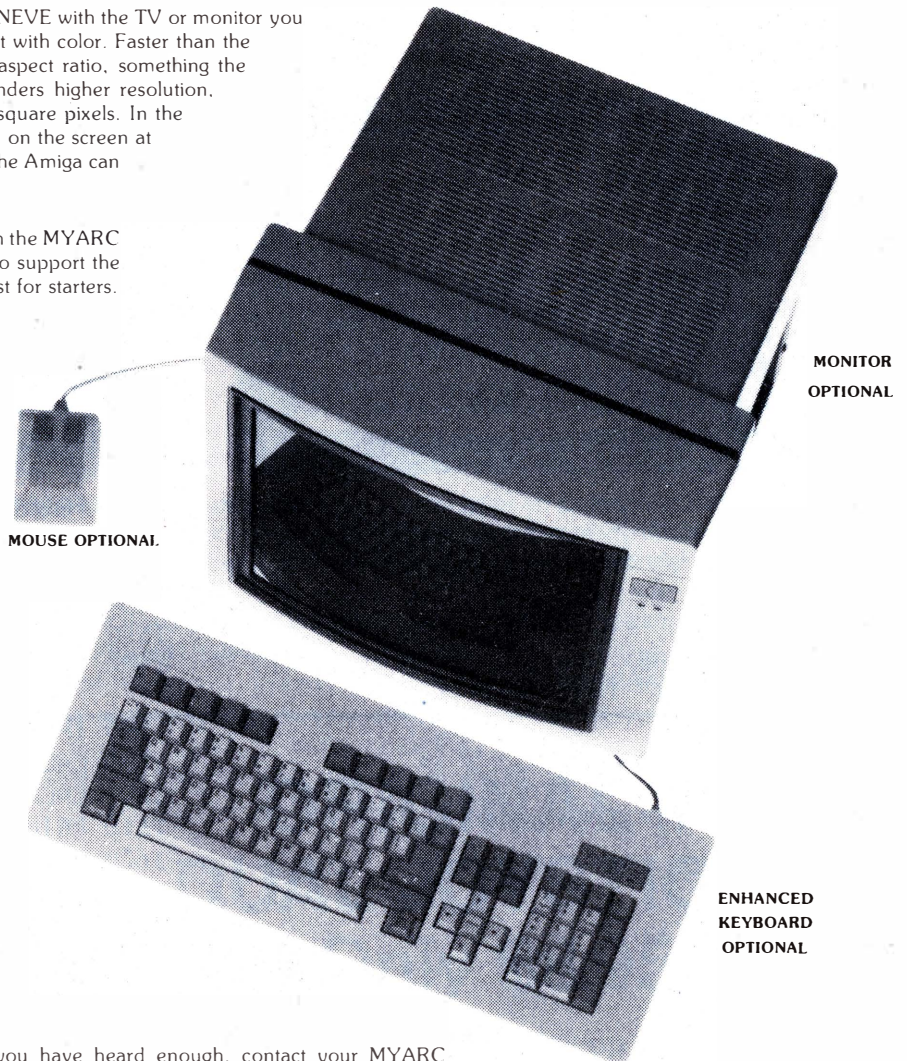
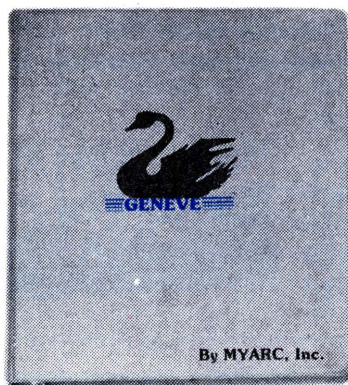
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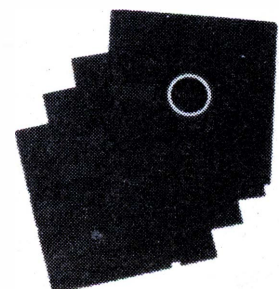
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REGENA—

(Continued from Page 10)

```

760 IF (B/2=INT(B/2))*(D/2=INT(D/2)) THEN 660
770 IF (B/3=INT(B/3))*(D/3=INT(D/3)) THEN 660
780 A$=STR$(A)
790 B$=STR$(B)
800 IF T>2 THEN 930
810 A=1
820 A$=""
830 H1=1
840 B=1
850 B$=""
860 H2=1
870 S1=1
880 IF T=2 THEN 910
890 S2=1
900 GOTO 950
910 S2=-1
920 GOTO 950
930 S1=(-1)^INT(4*RND)
940 S2=(-1)^INT(4*RND)
950 M=A*D*S2+B*C*S1
960 IF M=0 THEN 660
970 SM=SGN(M)
980 M=ABS(M)
990 M$=STR$(M)
1000 IF M$<>"1" THEN 1020
1010 M$=""
1020 AB=A*B
1030 AB$=STR$(AB)
1040 IF AB$<>"1" THEN 1060
1050 AB$=""
1060 CD=C*D
1070 CD$=STR$(CD)
1080 IF CD$<>"1" THEN 1100
1090 CD$=""
1100 S3=S1*S2
1110 T$=" "
1120 COL=5
1130 IF T>2 THEN 1160
1140 T$=""
1150 COL=4
1160 GOSUB 1840
1170 PRINT : "WRITE FIRST-DEGREE FACTORS"
1180 PRINT : "(";T$;" " ) (";T$;" " )
1190 CC=COL
1200 GOSUB 1870
1210 CC=CC+9+LEN(T$)
1220 GOSUB 1870
1230 IF T<3 THEN 1430
1240 PRINT : "FACTOR FIRST NUMBER"
1250 ROW=ROW-2
1260 CC=COL-1
1270 GOSUB 1960
1280 H1=N
1290 CC=CC+10
1300 GOSUB 1960
1310 H2=N
1320 IF H1*H2=AB THEN 1430
1330 FLAG=FLAG+1
1340 FL=FL+1
1350 IF FL=2 THEN 1390
1360 PRINT : H1;"TIMES";H2;"=";H1*H2
1370 PRINT : "FACTOR FIRST TERM AGAIN":
1380 GOTO 1160
1390 GOSUB 1840
1400 PRINT : "(";A$;X$;" " ) (";B$;X$;" " )
1410 H1=A
1420 H2=B
1430 PRINT : "FACTOR LAST TERM"
1440 ROW=ROW-2
1450 CC=COL+4
1460 GOSUB 1960
1470 F1=N
1480 CC=CC+9+LEN(T$)
1490 GOSUB 1960
1500 F2=N
1510 IF F1*F2=CD THEN 1630
1520 PRINT : F1;"TIMES";F2;"=";F1*F2
1530 FLAG=FLAG+1
1540 FL=FL+1
1550 IF FL=2 THEN 1760
1560 GOSUB 1840
1570 PRINT : "(";T$;X$;" " ) (";T$;X$;" " )
1580 IF T<3 THEN 1610
1590 CALL HCHAR(23,4,H1+48)
1600 CALL HCHAR(23,14,H2+48)
1610 PRINT : "FACTOR LAST TERM,";CD
1620 GOTO 1440
1630 PRINT : "NOW INSERT SIGNS"
1640 ROW=ROW-2
1650 CC=COL+2
1660 GOSUB 2050
1670 G1=SG
1680 CC=CC+9+LEN(T$)
1690 GOSUB 2050
1700 G2=SG
1710 IF H1*G2*F2+H2*G1*F1=M*SM THEN 1800
1720 PRINT : "FACTORS DO NOT COMBINE FOR M
IDLE TERM."
1730 FLAG=FLAG+1
1740 FK=FK+1
1750 IF FK<3 THEN 1160
1760 PRINT : "FACTORS ARE:"
1770 PRINT : "(";A$;X$;S$(S1+1);STR$(C);") ("
";B$;X$;S$(S2+1);STR$(D);")"
1780 GOSUB 540
1790 GOTO 600

```

(See Page 14)

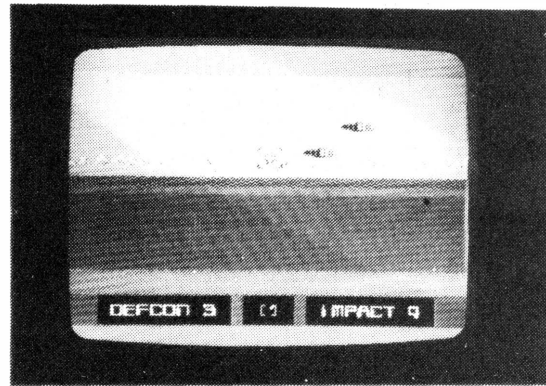
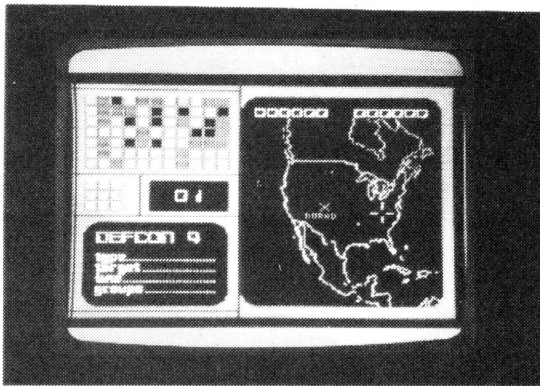
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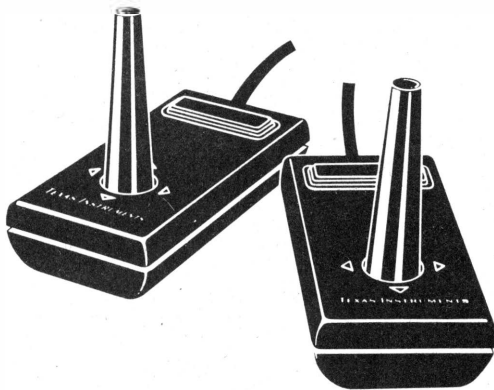
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```

1800 PRINT : "CORRECT"
1810 GOSUB 540
1820 IF FLAG>0 THEN 600
1830 RETURN
1840 PRINT : :AB$;X$;"^";S$(SM+1);M$;X$;S$(S
3+1);STR$(CD)
1850 ROW=23
1860 RETURN
1870 CALL SOUND(100,1400,2)
1880 CALL KEY(0,K,S)
1890 CALL HCHAR(23,CC,104)
1900 CALL HCHAR(23,CC,32)
1910 IF S<1 THEN 1880
1920 IF (K<88)+(K>90) THEN 1870
1930 CALL HCHAR(23,CC,K)
1940 IF K<>ASC(X$) THEN 1870
1950 RETURN
1960 CALL SOUND(100,1400,2)
1970 CALL KEY(0,K,S)
1980 CALL HCHAR(ROW,CC,104)
1990 CALL HCHAR(ROW,CC,32)
2000 IF S<1 THEN 1970
2010 IF (K<48)+(K>57) THEN 1960
2030 N=K-48
2040 RETURN
2050 CALL SOUND(100,1400,2)
2060 CALL KEY(0,K,S)
2070 CALL HCHAR(ROW,CC,95)
2080 CALL HCHAR(ROW,CC,32)
2090 IF S<1 THEN 2060
2100 IF (K=43)+(K=45)+(K=61)+(K=47) THEN 2110
ELSE 2050
2110 IF (K=43)+(K=45) THEN 2160
2120 IF K=47 THEN 2150
2130 K=43
2140 GOTO 2160
2150 K=45
2160 CALL HCHAR(ROW,CC,K)
2170 SG=1
2180 IF K=43 THEN 2200
2190 SG=-1
2200 RETURN
2210 CALL CLEAR
2220 REM BY REGENA
2230 END

```

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TI user groups listed

In November 1986 we asked for information from users groups in order to make a compilation for our readers. At last we have completed it. The information sent us has been supplemented by a list of user group addresses which was kindly sent us by Scott Darling, TI sysop on GENie. (Entries sent by Darling for which we received no direct information are marked with an asterisk.) We have no way of knowing how active these groups are, but note that some groups we know are active did not send us any information.

Alabama

***Bama 99ers**, P.O. Box 1307, Tuscaloosa, AL 35403.
***Central Alabama 99/4A User Group**, 551 Larkwood Dr., Montgomery, AL 36109.
***North Alabama 99 Users Group**, P.O. Box 11204, Huntsville, AL 35814.
***S.M.A.U.G.**, 464 Elmwood Dr., Mobile, AL 36609.
TI-BUGS Birmingham 99/4A Users Group, c/o Allan Cox, Secretary-Treasurer, 728 Jefferson Blvd. Tarrant, AL 35217. Phone: (205) 849-5592. Meets third Thursday of month at the Vestavia Public Library. Founded July 1982. TI-BUG and BUG-SOUTH clubs combined in December 1985 into the present club. Annual dues \$15 individual, \$20 family.

Arizona

Southwest Ninety-Niners, P.O. Box 17831, Tucson, AZ 85730. Phone: (602) 747-5046 or (602) 296-8198. BJ Mathis, president. Meets at 7:30 p.m. the first Tuesday of the month at the Fireman's Training Center on Ajo just west of park. Workshops and Special Interest Groups meet in members' homes. The BASIC Workshop meets the second Thursday; XBASIC Workshop meets the third Tuesday; Writer and Multipian SIG meets the third Thursday; Assembly Language and Forth SIG meets the fourth Tuesday. Library has more than 150 disks, plus books, publications and distributor price list. Annual dues \$20 first year, \$15 renewal, includes monthly newsletter.

Arkansas

***Saline 99er Users Group**, 422 S. Main, Denton, AR 72015.

California

Brea 99ers Users Group, c/o Kerry Grissom, Membership Chairman, 16328 Placid Dr., Whittier, CA 90604. Phone: (213) 943-6631. Meets at 7:30 p.m. first Monday of month at Western Federal Savings & Loan, #10 Fashion Square, La Habra, California. Founded March 31, 1985. Annual dues: \$15. Library fee: \$2 per disk.
***Central Valley Users Group**, 2419 Clemson Dr., Davis, CA 95616.
***Club 99**, 1877 E. Farland St., Covina, CA 91724.
E.T. 99er Club, P.O. Box 2752, Costa Mesa, CA

92628. Phone: (714) 855-0480. Contact: Ken Baldwin. Meets 9 a.m.-noon the second Saturday of each month at the Mercury Savings and Loan at the corner of IH5 and Lake Forest in El Toro, California. Founded 1980. Annual dues \$20.

Kings 99ers, 299 W. Birch Ave. Hanford, CA 93230. Phone: (209) 582-1385. Bill Mills, president. Meets fourth Monday of the month at 1255 Beulah St., Hanford, California. Founded Jan. 31, 1983. Annual dues 12, library membership fee \$20 (optional; gives unlimited access to club's library).

***L.A. 99ers**, P.O. Box 3547, Gardena, CA 90247-7247.

Nor-Cal TI Users Group, P.O. Box 112, Occidental, CA 95465. George Phillips, secretary-treasurer. Phone: (707) 527-2474, days, (707) 874-3231, nights. Meets at 7 p.m. first Wednesday of the month at the Retail Clerks Union Hall, 382 Tesconi Ct., Santa Rosa, California. Has 40 members, aged 12-72. Founded 1983. Annual dues \$10. Newsletter.

North Country 99ers, P.O. Box 2500, Escondido, CA 92025. Phone: (619) 747-3567. Contact: Mel Rotner. Meets at 7 p.m. first and third Wednesdays of the month at the Coast Federal Savings Bldg., 1540 E. Valley Parkway, Escondido, California. Founded March 1983. Annual dues \$18.

Pomona Valley 99er Computer User Group, c/o Bill Harms, 6527 Hayes Ct., Chino, CA 91710. Phone: (714) 628-1334. Meets second Monday of month at Chino-Cortez Elementary. Founded 1982. Annual dues \$20.

***San Diego Computer Society**, P.O. Box 83821, San Diego, CA 92138.

***San Fernando Valley Users Group**, P.O. Box 1844, Canyon Country, CA 91351.

San Francisco 99ers, 24816 Mango St., Hayward, CA 94545. Gary Anderson, president. Phone: (415) 786-1776.

***San Gabriel Valley Users Group**, 1008 Dore St., West Covina, CA 91792.

SNUG (Sacramento Ninety-nine Users Group), c/o Ron DeBernardi, Secretary-Treasurer, 8245 Catalpa Dr., Citrus Heights, CA 95610. Phone: (916) 726-8993. Meets third Monday of the month at the SMUD facility, 5026 Don Julio Blvd. Founded September 1981. Annual dues \$15. Library copy fee of 50 cents per disk, SS/SD.

***Southern California Computer Users Group**, P.O. Box 21181, El Cajon, CA 92021.

***T.I.C.O. (TI Club Oxnard)**, 3183 Kelp Lane, Oxnard, CA 93030.

TI Riverside User Group, 3523 McKinley St., Riverside, CA 92506. Phone: (714) 686-0336. Ed Butcher, president. Meets third Thursday of the month at Collett School, 10850 Collett Ave., Riverside, California. Founded May 5, 1983. Annual dues: \$20.
Tri-Valley 99ers, 306 Flittner Circle, Thousand Oaks, CA 91360. Phone: (805) 496-6237. Contact: Dennis Kenny. Meets third Friday of the month at the Mercury Savings and Loan, 2797 Agoura Rd., Westlake Village, California. Founded January 1983. Annual dues, \$12. Library programs \$1 each to members.

User Group of Orange County, 17301 Santa Isabel, Fountain Valley, CA 92708. Phone: (714) 842-0859. Contact: Knute Ersland. Meets 7:30 p.m. third Thursday of each month at Westminster Community Center, corner of Jackson and Westminster Ave. (one block east of Beach Blvd.), Westminster, California. Founded in early 1980s. Annual dues: \$20 initial, \$17 renewal. Library fee.

Valley of the Moon Home Computer Users Group, P.O. Box 1444, Sonoma, CA 95476. Phone: (707) 996-44642. Contact: Rudy O. Caris. Meets third Wednesday of each month; periodically scheduled workshops. Meeting places, 19400 Sleepy Hollow Court, Sonoma, California; 4148 Bennett Valley Rd., Santa Rosa, California; and 1700 Barlow Lane, Sebastapol, California. Founded October 1985. Annual dues: \$25 master membership (includes discounts to events, swap meets, etc.); \$10 for members of same household (same benefits as master membership).

Colorado

***Colorado 99/4 User Group**, Box 3400, Littleton, CO 80161.

Front Range 99er Computer Club, P.O. Box 9572, Colorado Springs, CO 80932. Joe Nuvolini, president, (303) 596-6938. Meets at 6:30 p.m. third Thursday of each month at the Cheyenne Mountain Inn. Founded July 1983. Annual dues \$15 individual, \$21 family, \$10 newsletter only (out-of-state only). BBS.

Rocky Mountain 99ers, P.O. Box 12605, Denver, CO 80212. Phone: (303) 458-5600. Contact: Joe Miller. Meets second Tuesday of month, phone for location. Founded 1982. Annual dues \$24. Library disk fee.

***Texas Instruments Club**, 2440 25th Ave., Greeley, CO 80631.

Connecticut

Nutmeg TI-99ers, c/o Janet Ryan, 10 Jolly Rd., Ellington, CT 06029. Phone: (203) 875-1647. Meets last Sunday of month at Vernon Police Station. Founded 1983. Annual dues: \$20 family.

Delaware

***Delaware Valley User Group**, P.O. Box 6240 Stanton Br., Wilmington, DE 19804.

District of Columbia

Washington D.C. Area TI Users Group. See entry under Virginia.

Florida

Bradenton Users Group (BUG), c/o H.M. Boyd, Librarian, 5815 13th St. E., Bradenton, FL 34203. Phone: (813) 755-2439. Meets second and fourth Tuesday of month at Trailer Estates Fire Station. Founded July 30, 1984. Annual dues \$12; \$2 rental per disk from library.

Broward Computer Group, 6264 No. Andrews, Fort Lauderdale, FL 33309. Phone: (305) 491-2886 (24 hours). Meets first Wednesday of month. SIGs on other Wednesdays at club office, group projects and meetings Thursdays. Projects have included Horizon RAMdisk and Supercart. More than 35 members.

(See Page 18)

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USER GROUPS—

(Continued from Page 16)

Countryside (TI) User Group, 48 Sugar Bear Dr., Safety Harbor, FL 33572. Contact: Cy Leonard. Phone: (813) 726-9192. Meets every Tuesday night at above address. Founded October 1984. No dues.

***Daytona 99ers**, P.O. Box 15232, Daytona Beach, FL 32017.

***Manasota 99 Users' Group**, 6625 Roxbury Dr., Sarasota, FL 33581.

***Martin County 99ers**, 1200 Starfish Lane, Stuart, FL 33494.

***MIT Lincoln Lab. 99/4A Users Group**, 8820 90th Way N., Seminole, FL 33543.

***Suncoast 99ers**, 5421 Westridge Dr., Tampa, FL 33615.

***Tallahassee 99ers**, 2600 Miccoukee Rd. #1202, Tallahassee, FL 32308.

***West Jax 99ers**, P.O. Box 176, Orange Park, FL 32073.

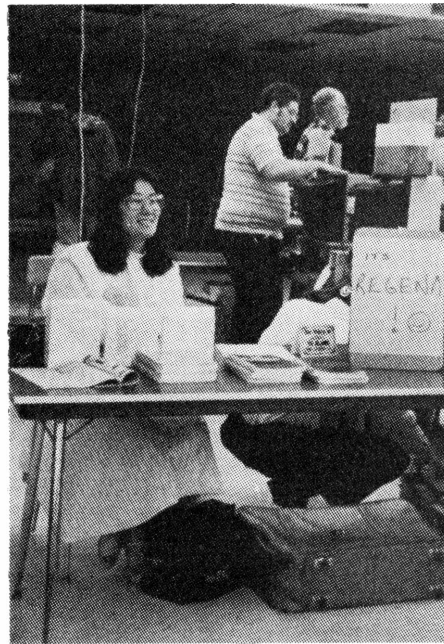
Georgia

***Atlanta 99/4A Computer Users Group**, P.O. Box 19841, Atlanta, GA 30325

Augusta 99ers. See entry under South Carolina.

Columbus TI99ers, 3735 Arrel Dr., Columbus, GA 31909. Phone: (404) 3327-3347. Contact: Ben Walden. Meets third Wednesday of each month at City Finance. Founded 1980. Annual dues \$5.

Macon 99/4A Users Group, 635 Villa Crest Ave., Macon, GA 31206. (912) 781-0839. Contact: Don Alexander. Meets 7-9 p.m. second Tuesday of each month at Washington Library, Macon, Georgia, and



Regena at the Fayuh

MICROpendium columnist Regena, Cheryl Whitelaw in private life, was among the exhibitors at the Boston Computer Society Fayuh, April 4. (Photo courtesy Cynthia Becker)

10 a.m.-1 p.m. second and third Saturday, Community Center, Warner Robins, Georgia. Founded June 1983. Annual dues \$15 individual, \$20 family.

***Savannah Computer Users Group**, 128 Jacquelyn Dr., Savannah, GA 31406.

Hawaii

***Aloha 99/4A Computer Users Group**, 92-865 Palalail St., Makakili, HI 96707

Idaho

Boise 99ers Computer Club, 6357 No. Portsmouth Ave., Boise, ID 83703. Phone: (208) 342-1396. Contact: J. Canning. Meets second Tuesday of each month at above address. Founded Oct. 11, 1983. Annual dues: \$12.

***Pocatello TI 99ers User Group**, 4990 Wildflower, Pocatello, ID 83204.

Illinois

Chicago Users' Group, P.O. Box 578341, Chicago IL 60657. Phone: (312) 657-1093. More than 600 members. Library, BBS, newsletter. Annual dues \$21.

***K*3 Users Group**, P.O. Box 1941, Kankakee, IL 60901.

W.W. 99ers, 3 Genevieve Lane, Champaign, IL 61821-7213. Phone: (217) 351-0943. Marc C. Levine, president. Meets second Friday of each month. Founded February 1984. Annual dues \$12; \$10 one-time initial fee.

Indiana

***Hoosier Users Group (HUGGERS)**, P.O. Box 2222, Indianapolis, IN 46206-2222.

Miami County Area 99/4A Home Computer User Group, P.O. Box 1194, Peru, IN 46970. Phone: (219) 563-2213. Contact: Dave Renkenberger. Meets at 6:30 p.m. second Tuesday of each month at NIPSCO Building, west edge of Peru on Old U.S. 24. Founded Jan. 1, 1983. Annual dues: \$12.

***Michiana 99/4 Users Group**, 911 Dover Dr., South Bend, IN 46614.

***The Fort's User Group**, P.O. Box 11212, Fort Wayne, IN 46856-1121.

Iowa

Cedar Valley 99er Users Group, 288 Windsor Dr., N.E., Cedar Rapids, IA 52402-1560. Contact: Jim Green. Phone: (319) 377-4073. Meets second Monday of month at 330 Collins Rd., N.E., Cedar Rapids, Iowa. Founded April 1983. Annual dues: \$8.

***Central Iowa 99/4A Users Group**, P.O. Box 3040, Des Moines, IA 50316.

***Quad Cities Computer Club**, P.O. Box 1124, Bettendorf, IA 52722.

Kansas

Kaw Valley TI Computer Users Group, P.O. Box 8424, Topeka, KS 66608. Phone: (913) 357-0402. Charles Galligher, president. Meets second Monday of each month at 200 East First St., Topeka, Kansas. Founded 1982. Annual dues \$15 individual, \$12 associate (non-attending), \$25 family, \$35 business. Lifetime membership \$99.

***Mid America 99/4 Users Group**, P.O. Box 2505, Shawnee Mission, KS 66201.

Kentucky

Bluegrass 99 Computer Society Inc., P.O. Box 11866, Lexington, KY 40578-1866. Contact: Mark Armstrong, president, (606) 266-6392 (home). Has 58 members. Meets at 7 p.m. first Thursday each month at Kentucky Utilities Operation Center, 500 Stone Road, Lexington, Kentucky. Founded April 13, 1983. Annual dues \$12.

***Kentuckiana 99/4 Users Group**, 299 W. Birch, Louisville, KY 40222.

Louisiana

***Bayou 99 Users Group**, P.O. Box 921, Lake Charles, LA 70602.

Massachusetts

***Lincoln Lab Computer Club**, 244 Wood St., Lexington, MA 02173.

MAGNETIC, 57 River Rd., Andover, MA 01810. Phone (617) 326-6527. Mike Gikow, corresponding secretary. Meets from 2 to 4 p.m. first Sunday of month September-June at the Atkinson School in North Andover, Massachusetts. Founded fall 1979. Annual dues \$12.

(See Page 20)

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CorComp 512K P-Box Card	229.95
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CorComp 512K Stand Alone	269.95
CorComp DS/DD Controller (for TI P-Box)	149.95
CorComp 9900 System with Free RS232 Y-Cable	299.95
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USER GROUPS—

(Continued from Page 18)

MUNCH (Massachusetts Users of the Ninety-nine and Computer Hobbyists), P.O. Box 7193, Worcester MA 01605. Phone: (617) 852-3250. Bruce Willard, corresponding secretary. Meets third Tuesday of month at the University of Massachusetts Medical Center, Worcester, Massachusetts. Founded October 1981. Annual dues \$15, \$10 first-year initiation fee.

***Stone-Webster Engr. TI Users Group**, 850 Temple St. RR #4, Duxbury, MA 02332.

Michigan

***Grand Rapids 99er Users Group**, P.O. Box 1649, Grand Rapids, MI 49501.

Great Lakes Computer Group Inc., P.O. Box 7151, Roseville, MI 48305. Phone: (313) 338-0272. June Smith, secretary. Meets first Monday of month (no meetings in July, August and December; two meetings in January), board meets third Monday of month. Founded October 1983. Annual dues \$25 per family, publishes newsletter.

***Home Computer Club**, F.E.R.A. Attn. Bob Hyzy, P.O. Box 152, Dearborn, MI 48126

***Muskegon 99ers Users Group**, 2118 Moulton Ave. N., Muskegon, MI 49445.

Minnesota

MSP99 Users Group, P.O. Box 12351, St. Paul, MN 55112. Phone: (612) 429-5256. Contact: Dick Lauhead. Meets third Tuesday of each month at the Dunwoody Institute, 818 Wayzata Blvd., Minneapolis, Minnesota. Annual dues \$18.

***3M TI99/4A Users Group**, 3M Co., 3M Center Bldg. 270-3S-06, St. Paul, MN 55144.

Mississippi

***Metro-Jackson Micro Users**, 519 Grandview Circle, Jackson, MS 39212.

Mississippi Gulf Coast T.I. Users Group, 7752A Cabell, Biloxi, MS 39531. Phone: (601) 374-4409. Rich Davies, president. Meets at 7 p.m. third Thurs-

day of month at Beth Israel Synagogue, Camilla St., Biloxi, Mississippi. Founded January 1984. Annual dues: \$8.

Missouri

***Kansas City Area TI99/4A**, P.O. Box 12591, North Kansas City, MO 64116.

***Ozark 99er User Group**, 2956 So. Barnes, Springfield, MO 65804.

***St. Louis 99ers**, P.O. Box 63156 Tower Grove, St. Louis, MO 63163

Nebraska

***Cross Roads 99er User Group**, P.O. Box 293, York, NE 68467.

Greater Omaha User Group, 11215 Crippen Circle, Omaha, NE 68138. Contact: Dee Turner, (402) 896-2221. Meets fourth Wednesday of each month; 62 members. Founded April 1982. Annual dues \$15.

***Lincoln 99er Users Group**, 4501 South 50th, Lincoln, NE 68516.

Nevada

***Northern Nevada 99ers**, 1345 Akard Dr., Reno, NV 89503.

***Southern Nevada Users Group (S.N.U.G.)**, P.O. Box 26301, Las Vegas, NV 89126-0301.

New Hampshire

***New Hampshire 99ers**, P.O. Box 5991, Manchester, NH 03108-5991.

New Jersey

***Central Garden State Users Group**, 91 Bennington Dr., East Windsor, NJ 08520.

***New Jersey Users Group**, 49 Pine Grove Ave., Somerset, NJ 08873.

***North Jersey TI Users**, 21 Morse Ave., Butler, NJ 07405.

***South Jersey Computer Club**, P.O. Box 902, Mays Landing, NJ 08330.

New Mexico

***Missile Range 99ers**, 2718 Topley Ave., Las Cruces, NM 88005.

New York

***Honeywell Users Group**, 1615 Northern Blvd. #201, Manhasset, NY 11030

***Hudson Valley 99/4A Users Group**, RD 1, Box 359-5, Kingston, NY 12401.

Long Island 99er TI User Group, P.O. Box 544, Deer Park, NY 11729. Francis J. Bubenik Jr., president. Meets second Friday of month at the Paumanok Elementary School, Udall Road at Sunrise Highway, Islip, New York. Founded April 1983. Annual dues \$20, copy fee for public domain disks \$3, publishes newsletter.

***Mid-Hudson 99ers**, P.O. Box 7298, Newburgh,

NY 12550.

QB 99ers, Queensboro Community College, Room 225, Springfield Blvd., Bayside, NY 11364-1497. Phone: (718) 631-6290. Contact: Frank Cotty or Peter Comber. Meets third Saturday after the first Monday of month at Queensboro Community College, Room 225. Founded January 1984. Annual dues \$10; \$5 initiation fee.

Rochester Users Group, c/o Robert Osborne, 34 California Dr., Rochester, NY 14616. Phone: (716) 663-0397. Meets first Thursday of month. BBS. Founded "Black Thursday." Annual dues: \$12.

***SMUG TI Users Group**, Singer Link, Kirkwood Dept. 444 MS/619, Binghamton, NY 13902

TITEX User Group, c/o Jay S. Leber, 36 Fox Place, Hicksville, NY 11801. Phone: (516) 796-8359. Meets teen Wednesday of month. BBS (516) 475-6463. Free disk/cassette library (Freeware and public domain only), free newsletter library. Founded September 1983. Annual dues \$15; newsletter only, \$10.

***Twin Tiers Users Group**, 122 Eastview Dr., Horseheads, NY 14845.

***Upstate New York 99/4A Users Group**, P.O. Box 13522, Albany, NY 12212.

Western New York 99ers Users Group, c/o 298 Brentwood Dr., North Tonawanda, NY 14120. Phone (716) 778-9104. Contact: Harry Brashear. Meets second Wednesday of each month (September to June) at the Kenmore Middle School, 155 Delaware Rd., Kenmore, New York. BBS The 39 Steps (716) 837-2818. Annual dues \$10, associate; \$15, individual; \$22, family.

North Carolina

Charlotte TI99 Users Group, 3454 Washburn Ave., Charlotte, NC 28205. Phone (704) 334-8302. Contact: Dave Wentzel. Meets first Monday of each month. Founded May 1983. Annual dues \$15.

***Forsyth 99er User Group**, 4801 Selwyn Dr., Winston-Salem, NC 27104.

Guilford 99ers, P.O. Box 21691, Greensboro, NC 27420. Phone: (919) 674-2318. Contact: Mike Garrett. Meets first Tuesday of month at the Glenwood Recreation Center, 2010 So. Chapman St., Greensboro, North Carolina. Founded August 1983. Annual dues: \$12 per family.

Ohio

Carnation City 99ers, c/o Gary Carr, 25869 Hartley Rd., Beloit, OH 44609. Phone: (216) 525-5451. Meets monthly at members' convenience in Beloit or Alliance, Ohio. Founded March 1985. Annual dues \$12.

***Cin-Day User Group**, P.O. Box 519, West Chester, OH 45069-0519.

***C.O.N.N.I.**, P.O. Box 21550, Columbus, OH 43221.

Geauga County 99ers. Meets second Friday of each month at Geauga Library. Founded January 1984. Annual Dues \$15.

Lima (Ohio) Area T.I.H.C.U.G., P.O. Box 647, Venedocia, OH 45894. Meets at 9:30 a.m. third Saturday of month in Room 335, Galvin Hall, Ohio State University Lima Campus. Founded May 1984. Annual dues \$15.

***Miami Trace Math Club**, 3722 SR 41 N.W., Washington Ch, OH 43143.

***Northcoast 99ers**, P.O. Box 2283, Euclid, OH

(See Page 22)

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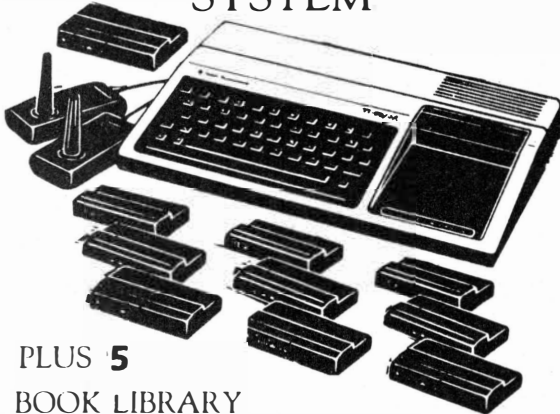
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Tex-Comp, the world's largest retailer of Texas Instruments home computer products invites you and your family to join the millions of families who are already using the TI-99/4A, the most powerful and versatile home computer ever produced. There are over 1000 programs now available for the TI-99/4A including education, family financing, arcade games, word processing, data base management, and the list goes on and on. New software & accessories are being continuously introduced. Tex-Comp and Texas Instruments have put together this offer to provide your family with the opportunity to get started with a **real quality computer** instead of an underpowered game playing toy.

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USER GROUPS—

(Continued from Page 20)

44123-0283.

***Summitt 99er Users Group**, 807 Washington Ave., Cuyahoga Falls, OH 44221.

Oklahoma

***Sooner 99ers**, 10700 Bayberry Dr., Oklahoma City, OK 73132.

Oregon

***Portland Users of 99s**, P.O. Box 15037, Portland, OR 97202.

Pennsylvania

***Central Pennsylvania 99/4A Users Group**, P.O. Box 14126, Harrisburg, PA 17104-0126.

Chester County TI Users Group, 111 Lakeview Dr., Exton PA 19341. Phone: (215) 363-9321. Contact: Milton Maslin. Meets fourth Tuesday of month at Coatesville Library. Founded June 1983. Annual dues \$10, library copying fee.

***Erie 99er Users Group**, 2812 W. 33rd St., Erie, PA 16506.

***Lehigh Users Group**, P.O. Box 3547, Allentown, PA 18103.

Ninety-Niner Data Exchange, P.O. Box 7160, York, PA 17404. Wayne Spyker, publicity chair, (717) 993-6514, leave message. Meets at 7 p.m. second Monday of month at the Adams Electric Cooperative Meeting Hall on Trinity Road (Pa. 616) just off U.S. 30, west of York. Newsletter. Tape and disk library free to members. Annual dues \$12 family.

Nittany Users of Texas Instruments (NUTI), 625 Wilshire Dr., State College, PA 16803. Phone: (814) 238-00396. Contact: Maurice W. Villano. Formed early or pre-1983. Meets third Monday of month in members homes. No dues, periodic assessments for newsletter postage.

***Philadelphia 99er Users Group**, P.O. Box 18486, Philadelphia, PA 19120.

***Pittsburgh Users' Group**, P.O. Box 27321, Pittsburgh, PA 15235.

***Susquehanna Valley Users Group**, R.D. #5 A Box 145, Danville, PA 17821.

***West Penn 99ers**, RR #1 Box 73A, Jeanette, PA 15644.

Rhode Island

North Eastern 99ers, c/o Hank Randall, President, 209 4th St., Providence, RI 02906. Phone: (401) 274-1329. Approximately 100 members, more than 1,000 library programs. Meets last Thursday of the month at the Le Foyer Club in Pawtucket, Rhode Island. Has club section on SYSLINK IV BBS (401) 272-1138. Annual dues \$20 new, \$15 renewal.

South Carolina

Augusta 99ers, 908 Plaza Place, North Augusta, SC 29841. Phone: (803) 278-4606. Contact: Larry Harpring. Meets second Friday of each month at the Georgia Railroad Bank, Daniel Village Shopping Center, Augusta, Georgia. Founded June 1983. No dues.



Get'em while they're hot

Members of the Boston Computer Society, hosts of the New England TI99 Faire, April 4, sold public domain programs to visitors. Pictured, from left, are Justin Dowling, Tom Freeman (center in back) and Tom Ward. Ten other New England TI user groups co-sponsored the annual event. (Photo courtesy Cynthia Becker)

***Charleston Area 99ers**, P.O. Box 65, Mount Holly, SC 29463.

***Midlands 99ers**, P.O. Box 7586, Columbia SC 29202.

***Piedmont 99ers Users Group**, P.O. Box 5921, Greenville, SC 29606.

***Sumter Computer 99ers**, 875 Bay Blossom Ave., Sumter, SC 29150

South Dakota

Siouxland 99ers, 4604 Bluestem Circle, Sioux Falls, SD 57106. Phone: (605) 361-6019. Contact: Bob Daggitt. Meets first Tuesday of the month at above address. Founded 1983. Annual dues \$12.

Tennessee

***K-Town 99/4A Users Group**, 3506 Garden Dr., Knoxville, TN 37918.

Mid-South (Memphis) 99 User Group, P.O. Box 38522, Germantown, TN 38183-0522. Contact Gary Cox, (901) 358-0667. Meets third Thursday of month at the Red Cross, 1400 Central Ave., Memphis, Tennessee. Founded February 1983. Annual dues \$15. Operates 24-hour TIBBS.

***Music City 99ers**, P.O. Box 24886, Nashville, TN 37202-4886.

Texas

***Amarillo 99/4A Users Group**, P.O. Box 8421, Amarillo, TX 79114.

***Brazos Valley 99ers**, P.O. Box 7053, Waco, TX 76710-7053.

***Central Texas 99/4A Users**, P.O. Box 200246, Austin, TX 78720-0246.

***Corpus Christi 99ers**, 534 Vaky St., Corpus Christi, TX 78444-2609.

***Dallas TI Home Computer**, 1221 Mosswood Place, Irving, TX 75061.

Forest Lane TI Users Group, P.O. Box 743005, Dallas, TX 75240. Phone: (214) 323-9257. Contact: Richard A. Fleetwood. Meets 2 p.m. first Saturday of month at SC Cafeteria, TI Main Plant, LBJ & Central, Dallas, Texas. TIBBS (24 hours) (214) 321-4233. Membership mostly TI employees, but open to public. Founded 1982. Annual dues \$15, library fee.

***Johnson Space Center Users Group (JUG)**, 2321 Coryell St., League City, TX 77573.

***Lubbock Computer Club**, 5912 16th St. 12, Lubbock, TX 79416.

***NET 99ers**, P.O. Box 534, Hurst, TX 76053.

Paris 99/4A Users Group, 2221 College Dr., Paris TX 75460. Jerry Keisler, president, (214) 785-5694. Normally meets at 7 p.m. fourth Thursday of month at Texas Power and Light, but varies. Founded April 24, 1986. Annual dues \$12 individual, \$18 family.

(See Page 23)

USER GROUPS—

(Continued from Page 22)

Pastor's Users Group (PUG), P.O. Box 97, Mobeetie TX 79061. Phone: (806) 845-3751. Contact: Rev. Steve Venable. No meetings. Founded August 1986. No dues.

***San Antonio Area 99ers**, P.O. Box 2509, Universal City, TX 78148.

Sun City TI99/4A Computer Club, P.O. Box 6966, El Paso TX 79906. Phone: (915) 755-1124. Contact: William Borchardt. Meets at 7 p.m. first Monday of the month at the El Paso Trade School, 4710 Alabama St. Annual dues \$10 per family, with \$5 one-time new member (family) fee.

Utah

***SLAVE Users Group**, 3892 So. 3760 W., West Valley, UT 84120.

Virginia

Tidewater 99/4 User Group Inc., 51 Gainsborough Pl., Newport News, VA 23602. Phone: (804) 857-6151. Ken Woodcock, president. Meets first and third Thursdays of month at Electronic Computer Programming Institute, 3661 E. Virginia Blvd., Norfolk, Virginia. Annual dues \$15.

***Washington D.C. Area TI Users Group**, Box 267, Leesburg, VA 22075.

Washington

NOVA (Ninety-Niners of the Vancouver Area) P.O. Box 508, Vancouver, WA 98666. Phone: (206) 693-7070. Contact: Dan Lissom. Founded August 1983. Meets last Wednesday of month at Fire Station Dist. 5, 213 N.E. 120th Ave., Vancouver, Washington. Annual dues \$10.

***Tacoma Eastside 99ers**, P.O. Box 42383, Tacoma, WA 98442.

***Tic Tac Users Group**, 812 S. 132nd St., Seattle, WA 98168.

***Tri Cities 99er Computer Club**, 2011 West Falls Ave., Kennewick, WA 99336.

Wisconsin

***Fox City Users Group**, P.O. Box 2553, Appleton, WI 54913-2553.

***J.C. Penney 99er User Group**, 11800 W. Burleigh St., Wauwatosa, WI 53225.

***Lonestar Computer Club**, P.O. Box 1422, Racine, WI 53401.

***Madison Area TI Users Group**, 3402 Portage, Madison, WI 53704.

***Rock 99 Computer Club**, N2425 Chapel Dr., Whitewater, WI 53190.

Sheboygan Area Users Group, P.O. Box 1151, Sheboygan, WI 53082-1151. Phone: (414) 564-2511. Contact: Merle Edwards. Meets third Thursday of month at Grant School. Founded Jan. 20, 1983. Annual dues \$15. Library fee: \$1 per program.

***Milwaukee Area Users Group**, Gene Hitz, 4122 N. Glenway, Wauwatosa, WI 53222.

Outside U.S.

Argentina

***Contact Norberto R. Bettinelli**, Casilla de Corea 39, 1429 Buenos Aires, Argentina.

Australia

ATICC (Adelaide TI Computer Club), 26 Suffolk Ave., Brahma Lodge, South Australia 5109. Phone: 082583499. Contact: Fred Cugley. Meets at Dernan Court School, dates announced in newsletter. Founded January 1982. Annual dues \$18.

Hunter Valley 99ers User Group, 6 Arcot Close, Tarro, New South Wales, 2322 Australia. Albert Anderson, secretary. Phone: 049-662602. General meeting 7:30 p.m. second Tuesday of each month, special interest groups 7 p.m. every Tuesday, all at the common room of Warners Bay High School at the crossroads at Warners Bay. Founded April 1985 (formerly a regional group of the Sydney [TISHUG] User Group). Annual dues \$20 in Australia, \$40 overseas (Australian funds). Membership year begins in July of each year.

***TI 99 Users of Perth**, P.O. Box 246, Mt. Lawley, Western Australia 6050.

Austria

***TI 99 Journal-Club**, Stumpergasse 14, A-1060 Vienna, Austria.

Belgium

***Texsoft Club**, Stradspoortstraat 24, 2470 Herentals, Belgium.

***TI99/4A Gebruikersclub**, Vlaanderen T Vrije 120, B-8640 Wevelgem, Belgium; or Oudenaardse-teenwec 63, B-8500 Kortrijk, Belgium. (Two addresses listed.)

Canada

***Club Info. Montreal 99**, 53 White Oak Rd., Dollard des Ormeaux, Quebec, Canada H9B 1K2.

Edmonton 99er Computer User Society, P.O. Box 11983, Edmonton, Alberta, Canada T5J 3L1. Phone: (403) 420-6028. Tom Hall, president. Meets at 7 p.m. second Tuesday of month in Room 849, General Services Bldg., University of Alberta. Founded January 1982. Annual dues \$20, \$15 for students. One-time hardware fee of \$20 is charged. This has bought the club a BBS system and is used for demos and tutorials at each meeting.

***Fredericton Area Users Group**, 170 Canterbury Dr., Fredericton, New Brunswick, Canada E3B 4L9.

***Kawartha 99ers**, P.O. Box 373, Peterborough, Ontario, Canada K9L 1M1.

***Mauricie 99**, 964 Cinq-Mars, Trois-Rivieres, Quebec, Canada G8Z 3V2.

***Montreal TI99/4A Users**, 5290 W. Broadway, Montreal, Quebec, Canada H4V 2A2.

9T9 Users Group, #109-2356 Gerrard St. E, Toronto, Ontario, Canada M4E 2E2. Phone: (416) 469-3468. Randy Rosetto, secretary. Meets last Tuesday of the month at the York Woods Public Library, 1785 Finch Ave. W., Downsview, Ontario. Found-

ed September 1982. Annual dues \$30, \$20 fee for out-of-town newsletter subscriptions.

North Bay 99ers, c/o Patrick S. Graham, Secretary, 159 Donald Dr., North Bay, Ontario, Canada P1A 3H2. Phone: (705) 474-9290. Meets second Thursday and last Monday each month during school year.

BBS, "The Razor's Edge," (705) 472-9668. Founded March 8, 1984. Annual dues: \$20 per family (only one vote per family). Overdue fines for group software and hardware on loan to members. Newsletter.

***Ottawa TI99/4A User Group**, P.O. Box 2144 Station D, Ottawa, Ontario, Canada K1P 5W3.

***RND 99ers**, 74 Cooper Crescent, Regina, Saskatchewan, Canada S4R 4J7.

STICC (Saskatoon Texas Instruments Computer Club), P.O. Box 7925, Saskatoon, Saskatchewan, Canada S7K 4R6. Contact person: John Thomson.

Phone: (306) 244-1394. Meets at 7 p.m. first Monday of the month in Room 144, Saskatoon Region Community College, 145 First Ave. No. Founded October 1982. Annual dues \$10 individual, \$12 family.

Sudbury 99ers, c/o John Majkot, President, 2530 Ida St., Sudbury, Ontario, Canada P3E 4X1. Phone: (705) 522-5665. Meets first Wednesday of the month at St. Andrews Place, 7th floor, 111 Larch St., Sudbury. Founded February 1983. Annual dues \$20.

***TI99/4A National Users Association of Canada**, 83D Glen Park Dr., Gloucester, Ontario, Canada K1B 2Z1.

***TI Nova Scotia**, P.O. Box 3391, Dartmouth, Nova Scotia, Canada B2W 5G3.

***TI-Sherbrooke**, 422 7E Ave. Sud, Sherbrooke, Quebec, Canada J1G 2N2.

***Victoria 99ers**, 1369 Finlayson St., Victoria, British Columbia, Canada V8T 2V5.

WESTIG (Windsor-Essex TI Users Group), 2920 St. Patricks, Windsor, Ontario, Canada N9E 3G7. Phone: (519) 966-6977. Chris Kale, secretary. Meets fourth Tuesday of each month at Windsor Public Library Seminole branch, 4285 Seminole. Founded Feb. 1, 1984. Annual dues \$15.

Winnipeg 99/4 Users' Group, 1105 Church Ave., Winnipeg, Manitoba, Canada R2X 1G1. Phone: (204) 586-6889. Contact: Paul Degner. Founded 1982. Annual dues: \$10

Denmark

***Computer Gruppen TI99/4A**, Banktknudsvej 46, 1903 Fredricksberg, Denmark.

***TI-FORT User Group**, Maanevej 24, 3100 Hornbeck, Denmark

England

***TI*MES**, 40 Barrhill, Patcham, Brighton, East Sussex, England BN1 BUF.

***TI-Lines**, 96 Banbury Rd., Oxford, England OX2 6JT

Fed. Rep. of Germany

TI 99er Workshop Rheinland, Karl-Marx-Allee 18, D-5000 Koeln, West Germany. PR-Manager: Mike Heuser. Phone: 221-703979 between 19.00 and 22.00 met. BBS 228-658232. Between 50 and 60 members, no dues.

(See Page 26)

Forth tips

Inverse video enhances display

By LUTZ WINKLER

One feature that can enhance a program by making on-screen prompts and other information stand out is "inverse" video, where the text/screen colors are reversed. With Forth this is easily accomplished.

Michael Jaegermann, of the Edmonton (Alberta) Users Society, provided the basis for the routine shown below. Unfortunately, unless you have all of his enhancements at your disposal, it is not directly transferable. However, the screen at right can be used instead.

EXPLANATION

1. Insures that the system calls are booted which allows VMBR and VMBW to be used.
2. VDP reads and writes are always easier in hex.
3. Read ASCII 32-127 to PAD and write them from PAD to the high order (ASCII 160-255) area in PDT. If you have placed a charset on screen 19 replace this line with:
: 13 BLOCK 100 + DL00 300 VMBW.

```

0 ( INVERSE VIDEO )
1 33 CLOAD RANDOMIZE
2 BASE->R HEX
3 900 PAD 300 VMBR PAD D00 300 VMBW
4 : INVERT 1000 D00 DO FF I VXOR LOOP ; INVERT
5
6 : (^) COUNT OVER + SWAP DO I C@ 80 OR EMIT8 LOOP ;
7 : (IV) BEGIN KEY DUP 1F > WHILE 80 OR EMIT8 REPEAT
8 DROP DROP ;
9 : IVLIT 22 STATE @
10 IF COMPILE SLIT WORD HERE C@ 1+ =CELLS ALLOT
11 ELSE WORD HERE THEN ; IMMEDIATE
12 : IV" [COMPILE] IVLIT STATE @
13 IF COMPILE (^) ELSE (IV) THEN ; IMMEDIATE
14
15 R->BASE

```

4. INVERT performs a VXOR on the high order charset to turn off pixels on, and on pixels off.
6. The exponentiation symbol converts a string to inverse video.
7. (IV) accepts input from keyboard for inverse video.
9. IVLIT is WLITERAL adapted for IV purposes, delimiter is ASCII 34 (quote mark) instead of BL (ASCII 32).

12. IV" (used in place of .') will display or compile text following it in inverse video until delimited by '.

USAGE

IV" (enter) — keyboard input is displayed in inverse video until the enter key is pressed.

: TEST IV" This is a test"; will always display 'This is a test' in inverse video when TEST is invoked.

Texaments to support software library

Turbo Pascal system released

Texaments announces TURBO-PASC 99, which it describes as an integrated software package that includes a command processor, full featured editor, "lightning fast" single-pass compiler and a linker.

According to Steve Lamberti of Texaments, programs can be compiled in memory "on the fly, without code generation." Permanent compilation can be directed to disk and files are saved in DV/80 format, he says.

He says the editor is full screen (22 rows, 80 columns). Keywords are automatically detected and converted to capitals to avoid common syntax errors, he says. Indentation is automatic and all common editing functions are available, i.e. delete and insert character/line, move/copy/delete lines, goto specified line number and find string.

Lamberti says the compiler generates pure TMS9900 machine code in a single pass at a rate up to 80 lines per second. He says compiled programs run up to 50 percent faster than c99 programs and "countless times faster than interpreted BASIC." He says compiled code is relocatable and can be interfaced with assembly language routines, and with the TURBO-PASC 99 Linker, modules can be linked together and executable RUN PROGRAM FILES (Editor/Assembler option 5) can be generated.

He says the program dfeatures, INTEGER, REAL, BOOLEAN, STRING and ARRAY data types, automatic data type conversion, procedures and functions with dynamic storage allocation, external declaration and standard parameter passing, STREAM, BLOCK and RELATIVE file

management functions and standard Pascal statements like FOR, IF, CASE, WHILE and REPEAT.

Requirements are a disk system, 32K memory expansion, and Editor/Assembler. Lamberti says a user manual and Windows 99, a window management program, are included with the system disk and that future applications and programming aids, including a graphics programming toolbox, are scheduled. He says Texaments will be supporting a public domain and freeware library of applications, programming aides and Pascal subroutines.

The package retails for \$79.95. For further information, or to order, contact Texaments, 53 Center St., Patchogue, NY 11772, or (516) 475-3480 (voice) or (516) 475-6463 (24-hour data).

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<input type="checkbox"/> PHT 6007 Teach Yourself Basic Part 2	\$6.95	\$2⁹⁵	<input type="checkbox"/> PHT 6051 Mystery Fun House	\$9.95	\$3⁹⁵
<input type="checkbox"/> PHT 6018 Market Simulation	\$8.95	\$3⁴⁹	<input type="checkbox"/> PHT 6052 Pyramid of Doom	\$9.95	\$3⁹⁵
<input type="checkbox"/> PHT 6016 Structural Engineering Library	\$8.95	\$3⁴⁹	<input type="checkbox"/> PHT 6053 Ghost Town	\$9.95	\$3⁹⁵
<input type="checkbox"/> PHT 6019 Teach Yourself Extended Basic	\$6.95	\$2⁹⁵	<input type="checkbox"/> PHT 6056 Golden Voyage	\$9.95	\$3⁹⁵
<input type="checkbox"/> PHT 6025 Bridge Bidding	\$9.95	\$3⁹⁵	<input type="checkbox"/> PHT 6067 Beginners Basic Tutor— Lessons 1, 2, 3, 4	\$6.95	\$2⁹⁵
<input type="checkbox"/> PHT 6031 Speak & Math	\$9.95	\$3⁴⁹	<input type="checkbox"/> PHT 6070 Logo Sampler		\$3⁹⁵
<input type="checkbox"/> PHT 6037 Draw Poker	\$7.95	\$3⁹⁵	<input type="checkbox"/> PHT 6071 Line by Line Assembler		\$3⁹⁵
<input type="checkbox"/> PHT 6038 Lease Purchase Decisions	\$9.95	\$3⁹⁵	<input type="checkbox"/> PHT 6101 Arcade Entertainment		\$3⁹⁵
<input type="checkbox"/> PHT 6042 Spell Writer	\$9.95	\$2⁹⁵	<input type="checkbox"/> TV RF Modulator		\$5⁹⁵
<input type="checkbox"/> PHT 6043 Pirate Adventure	\$6.95	\$3⁴⁵			

\$1.00 Shipping and Handling per Item

C. J.'s Wholesale

14200 East Colonial Dr.
Orlando, FL 32826

Name _____

No. Cassettes Ordered _____

Address _____

Total \$ Amount Ordered \$ _____

City _____

Shipping & Handling \$ _____

(\$1.00 per item)

State _____ Zip _____

Phone AC () _____

Total \$ Amount Enclosed \$ _____

Load XB programs from directory

It's been several years since MICROpendium has published a catalog program that also allows the user to load a program from the directory listing. The following program is a fine example of the genre and was submitted by its author, Richard Lumpkin. Lumpkin is a member of the Houston (Texas) Users Group.

The program requires a disk system, Extended BASIC and a memory expansion. It will catalog up to 64 Extended BASIC programs from a single disk. The user may then page through the catalog and select the program he wants to load by number.

"I think it is a neat way to menu Extended BASIC disks, without having to create a true menu file for each disk, or upgrade the menu or load file each time you add to the disk," the author writes.

The program, called XBMENU64 (there's also XBMENU18 which catalogs up to 18 programs) reads the disk directory, selecting only program or I/V254 types and then creates a RUN "filename" command for the array element selected from the list. "The program may be saved as a LOAD file for any disk with

"straight" Extended BASIC programs, and it runs a new catalog each time it operates, so more added programs show up immediately," Lumpkin writes.

He cautions that the first four program lines must be entered first and that no editing be done to them after other lines are entered.

After entering the program, save it as MERGE file (SAVE DSKx.filename,MERGE), enter NEW and then MERGE the program back into memory. When first run, you will be pro-

mpted to read the instructions included in the first seven lines and then delete line 7 prior to running. Once you've run the program, you may as well REM line 7.

After the directory has been read (it will read only Extended BASIC programs, ignoring other types), you may press the "p" key to review all the programs. Entering the corresponding program number is all it takes to load a program from the catalog.

Users who do not wish to enter the code may obtain it from the Houston User Group TIBBS at 713-475-8909.—Ed

Auto-Run Menu Loader

```

1 GOTO 5
2 REM * FOR*USER*GROUP*DIST*
  ***** AUTO-RUN MENU-LOADER*
  ***** FOR X-BASIC PROGRAMS*
  ***** BY R. LUMPKIN, HOUSTON
  ***** (H.U.G.) FEB 87*****
3 ON ERROR 12
4 REM AUTO-MENU LOADER>>>::
5 REM** I M P O R T A N T **
  **DO NOT ATTEMPT TO EDIT
  OR RE-SEQUENCE STEPS 1-5
6 REM--TO FIX LOADER: -"SAVE
  DSK1.MENU,MERGE"- "NEW"- "MER
  GE DSK1.MENU" //SEE ALSO #18
7 CALL CLEAR :: DISPLAY AT(
  1,8): "S T O P !": :: " 'LIST
  1-7' AND READ...": "ERASE #7
  &'SAVE' AS 'LOAD'." :: STOP
8 CALL CLEAR :: CALL INIT ::
  CALL CHARSET :: CALL SCREEN
  (6)
9 DIM ZZ$(65):: DIM L$(65)::
  DIM RS(15)
10 FOR N=0 TO 12 :: CALL COL
  OR(N,16,6):: NEXT N
11 GOTO 15
12 DISPLAY AT(6,1)ERASE ALL:
  " WE SEEM TO HAVE A PROBLEM
  "::::" ARE THESE EXTENDED B
  ASIC "::::" PROGRAM DISKS
  ??"
13 RUN 14
14 INPUT " Y / N ?":Y$ :: IF
  Y$="Y" THEN 15 ELSE 17
15 DISPLAY AT(6,2)ERASE ALL:
  " EXTENDED BASIC AUTO-MENU":

```

```

::::" LISTS PROGRAMS ON A
  DISK": :: " AND RUNS YOUR C
  HOICE"
16 FOR ZZ=0 TO 65 :: ZZ$(ZZ)
  ="" :: L$(ZZ)="" :: NEXT ZZ
  :: ZZ=0 :: GOTO 18
17 CALL CLEAR :: DISPLAY AT(
  10,3): " OOPS, I HAVE A PROBL
  EM WITH THAT, PLEASE CH
  ECK DISK AND TRY AGAIN!"
18 RUN 19 ! REMOVE ! FROM 19
  TO AUTO-RUN DSK1.
19 ON ERROR 17 ! :: ZZD=1 ::
  GOTO 21
20 DISPLAY AT(24,1)BEEP: " **D
  ISK LOCATION (1-4)? 1"
21 ACCEPT AT(24,24)SIZE(-1):
  ZZD
22 OPEN #1:"DSK"&STR$(ABS(ZZ
  D))&".", INPUT ,RELATIVE,INTE
  RNAL
23 P=1 :: INPUT #1:ZZ$(0),ZZ
  Z,ZZZD,ZZZZD :: CALL CLEAR
24 DISPLAY AT(1,2): "DSK":STR
  $(ZZD): " -DISKNAME= ":ZZ$(0)
  : " AVAIL =":ZZZD: " USED =
  ":ZZZD-ZZZZD
25 DISPLAY AT(3,1): "CHOICE
  FILENAME SIZE TYPE ---
  ----- " :: 0
  N ERROR 12
26 ZZ=ZZ+1 :: IF ZZ>64 THEN
  42 ELSE INPUT #1:ZZ$(ZZ),ZZZ
  ,ZZZZ,ZZZZZ :: IF ZZ$(ZZ)=""
  THEN 36 ELSE IF ABS(ZZZ)>4

```

See Page 27

USER GROUPS—

(Continued from Page 23)

Holland

Vereniging TI-Gebruikersgroep, Bellefleurlaan 15, 1695 HA Blokker, Holland. Contact: K.G. Hollmann. Phone: 2290-32670. Has 1,000 members, library of 300.

New Zealand

*Contact L.I. Stevens, 92 Station Rd., Papatoetoe, Auckland, New Zealand.

Singapore

*TIES of Singapore, P.O. Box 698 Tiong Bahru, Singapore 9116

Sweden

PROGRAMBITEN, c/o Schibler, Wahlbergsgatan 6, 1 tr ned, S-121 46 JOHANNESHÖV, Sweden. Contact: Jan Alexandersson. Phone: +46 8 771 05 69. Meets four times a year. Founded 1978 for TI-59, 1983 for TI99/4A. Annual dues \$17 U.S. (SEK 120)

AUTO-RUN MENU LOADER—

Continued from Page 26

```

THEN 28 ELSE IF (ABS(ZZZ)=4)
*(ZZZZZ=254) THEN 29 ELSE ZZ=
ZZ-1
27 GOTO 26
28 ZZZZZ$="PROG." :: GOTO 30
29 ZZZZZ$="I/V254"
30 IF ZZ<10 THEN T$=" " EL
SE T$=" "
31 T$=T$&STR$(ZZ)&" "&ZZ$(
ZZ)
32 FOR N=1 TO 11-LEN(ZZ$(ZZ)
):: T$=T$&" " :: NEXT N
33 IF ZZZZ<10 THEN T$=T$&"
" ELSE IF ZZZZ<100 THEN T$=T
$&" "
34 T$=T$&STR$(ZZZZ)&" "&ZZZZ
Z$ :: L=ZZ :: L$(ZZ)=T$ :: I
F ZZ>16 THEN 26
35 DISPLAY AT(L+4,1):T$ :: G
OTO 26
36 IF ZZ<=17 THEN 47 ELSE 44
37 IF ZZ<=17 THEN 47 ELSE IF
P<=ABS((ZZ-2)/16) THEN P=P+1
ELSE P=1

```

```

38 L=(P-1)*16
39 FOR N=1 TO 16 :: DISPLAY
AT(N+4,1):L$(L+N):: NEXT N
40 DISPLAY AT(21,1):""
41 GOTO 44
42 DISPLAY AT(22,1):" 64+ PR
OGRAMS ON THIS DISK, ENTER
'P' TO SEE 17-64, OR"
43 GOTO 50
44 DISPLAY AT(22,1):" CATALO
G IN-COMPLETE, ENTER"
45 DISPLAY AT(23,1):" 'P' TO
VIEW MENU PAGES, OR"
46 GOTO 50
47 DISPLAY AT(22,1):" CATALO
G COMPLETE, ENTER A 'R' TO
REDO LIST, OR ENTER"
48 GOTO 50
49 DISPLAY AT(22,1):" CHOICE
OUT OF RANGE, ENTER"
50 DISPLAY AT(24,1):"NUMBER
OF CHOICE:"
51 ON ERROR 49 :: ON WARNING
NEXT
52 ACCEPT AT(24,20)BEEP VALI

```

```

DATE(DIGIT,"PR"):Z$
53 IF Z$="R" THEN 62 ELSE IF
Z$="P" THEN 37 ELSE Z=VAL(Z
$)
54 IF Z<1 THEN 49 ELSE IF Z>
ZZ-1 THEN 49
55 DISPLAY AT(22,1)ERASE ALL
:"***LOADING AND RUNNING***
* ";;" < ";ZZ$(Z)
;" >"
56 R$="DSK"&STR$(ABS(ZZD))&"
."&ZZ$(Z):: L=LEN(R$)
57 FOR N=1 TO L :: RS(N)=ASC
(SEG$(R$,N,1)):: NEXT N
58 CALL LOAD(-199,169,199,L)
59 FOR N=1 TO L :: CALL LOAD
(-197+N,RS(N)):: NEXT N
60 CALL LOAD(-196+L,0,0,0,13
0,0)
61 RUN 3
62 DISPLAY AT(22,1)ERASE ALL
:" MENU RE-DO WAS SELECTED":
"" :: CLOSE #1 :: GOTO 16
63 END

```

Users in England view hardware at confab

By STEPHEN SHAW

March 28 the West Midlands TI User Group, supported by the International TI User Group of Oxford, England, joined with the Cortex User Group in a meeting entitled the National TI Users Workshop in Bloxwich, Walsall.

The Cortex is a home-built computer using the 9995 chip and "TI Power BASIC"—largely incompatible with the 99/4.

The workshop was a non-commercial gathering of TI users to share ideas and solutions, and no vendors were present. There was a good selection of hardware and software on display, however.

The Geneve was present in two forms—a prototype with a standard keyboard, and a final product with the enhanced keyboard. Due to the lack of a suitable monitor, these were not displayed working, but the manual was present and made interesting reading.

The Mechatronic Mouse was present, driving TI Artist, and a very neat and easy-

to-use little mouse it was. It did not appear to have a routine to enable you to use it with modules expecting keyboard or joystick input.

Also on show were a number of homebrew cards, including RAM and GRAM cards—yes, a mighty GRAM card for the PEB!

We saw our first Navarone "make your own" cartridge, and one TI owner was happily making his own modules up, and demo'd TI-Runner and Micropinball, in TI module form! His children don't like disks that much, apparently.

And a very neat Horizon RAM card was present for inspection—beautiful. The cost of a ready made up board here is 176 pounds—don't forget we have to pay 15 percent sales tax plus 7 percent duty on everything that is imported!

The Geneve we hope to have available for under 400 pounds.

A puzzling item was a console which had

a cable from its back direct into a television. The European console has a color difference output which does not feed into the standard RGB or composite video sockets on most monitors. In this case, a unique monitor made by Tatung was being used: they have had a bad time with their Tatung Einstein computer, which just happens to use TI output, and therefore have some monitors to dispose of! No sound on board, though; you have to add that yourself.

Another very interesting demo involved two non-TI machines. A program was written on one of these Z80 machines and run. Then it was passed by RS232 to a TI99/4A console, and RUN! Then a program was written on the TI99/4, passed back, and RUN on the Z80 machine! The secret? Pascal and the TI P-code card.

The gathering lasted from 10 a.m. to 6 p.m., and despite the lack of food (and toilet paper) a good time was had by all.

QS-Solitaire

Deck is stacked in its favor

By **BRUCE BURNS**

At first, admittedly, I was skeptical as to whether a computerized version of a card game was worth the money it would cost. Then I discovered this excellent game.

It had been at home for about two days when my younger brother loaded the game up on our old TI, and made noises expressing enjoyment, which aroused my attention, needless to say.

What I saw (and later played), was the most exciting graphics display I had seen on a TI for a long time.

But enough personal history. Let's get down to the nitty gritty!

As I said, the graphics are excellent, and the mere fact that it has graphics instead of some stupid code that only the programmer and the writer of the instructions knew.

Speaking of instructions, there is a bad point if you are playing for the first time and you don't have a working joystick (optional). The instructions are pretty vague in their definitions of "deck," "stack," and "pile," which can cause confusion and frustration if you fit the description above. For those that have a joystick, my advice is to use it the first time you play. That way, you will better understand the keyboard, which is much easier and faster to use.

Once you figure out how to work it, you will have almost no problem using it, that is, assuming you know how to play the regular version of Solitaire (sometimes called Patience). The documentation gives no rules for the regular game. This was not a problem for me, but my stepfather had never played and had to dig into his volume of Hoyle.

Now that I've told you about the high and low points of the program, I might as well describe the whole thing.

You start out with \$250 in earnings, and a choice between the normal and Las Vegas version. If you choose the normal version, your earnings are moot. However, if you choose the more challenging Las Vegas version, you automatically lose \$52 to start with, and the object is not to while away the hours, but rather, to win all that

Review

Report Card

Performance.....	A+
Ease of Use.....	A
Documentation.....	C
Value.....	A
Final Grade.....	A-

Cost: \$14.95 (sale price)

Manufacturer: Quality 99 Software, 1884 Columbia Rd. #1021, Washington, D.C. 20009

Requirements: console, monitor or television, disk system or cassette recorder (depending on version), X BASIC and 32K RAM.

cash back.

If you are not familiar with the Las Vegas version, basically it's this: You are allowed to pull the cards off the deck one at a time. However, once you have put your "unneeded" cards into a discard pile, you may not use them again, thus ending the game.

By now some of our more practical

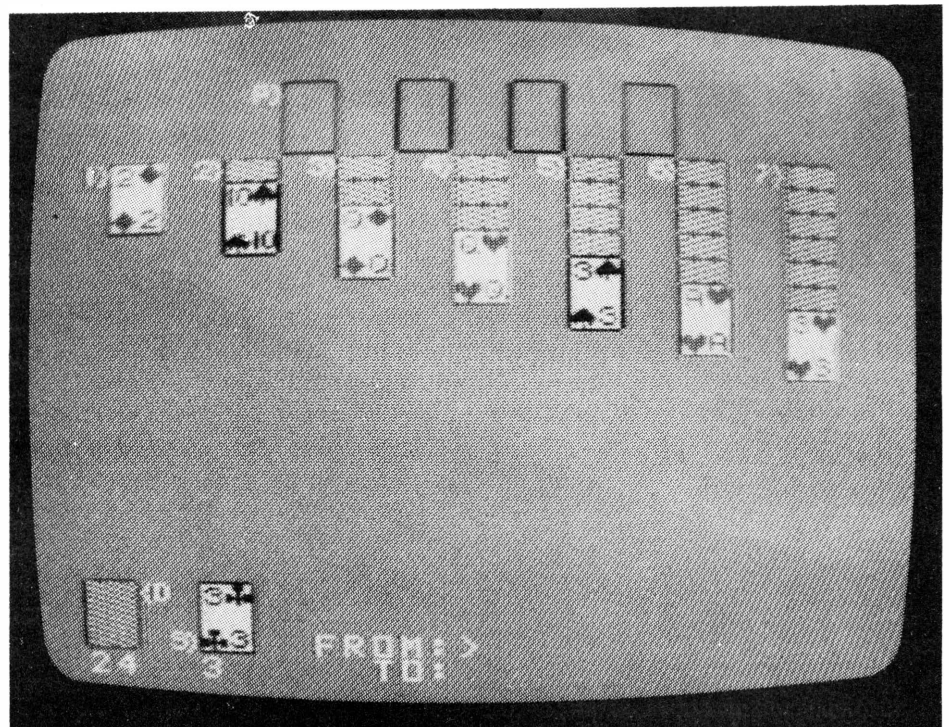
minded readers are thinking "OK. So it's a good game. Can't you get the same entertainment from your old deck of playing cards?"

Well, for your information, this game actually has a few advantages over your deck of "Lucky Ace Poker Originals." For instance, there is practically no danger of losing a card unless you leave a magnet on the disk, and why would you do a silly thing like that? Hmmm? Also, it is impossible to "mis-shuffle" or mislay the cards during the game, which would ruin the game with those torn, faded, blue or red stained "Old Trusties" hidden somewhere in the back of the desk drawer in the study.

Of course, as much as I hate to admit it, playing cards have some advantages over this program, such as the fact that you can buy deck of cards for around a dollar or less, while this costs nearly \$15, and you can play the old-fashioned version during a power failure, but, over all, this game is worth it.

I am now going back to my study to play this game once again. Goodbye.

#&%(&!!! Lost again!



Myarc 9640 computer — Part II

Production board arrives; still awaiting release of M-DOS

By JOHN KOLOEN

This installment of my review of the Geneve 9640 computer was written using the "next to final" version of My-Word, the new name for Myarc's 80-column word processor.

The program, while still basically an upgrade of TI-Writer, represents a considerable enhancement over TI-Writer and the version of My-Word that I used to write last month's installment. There's a lot more bells and whistles in this version (Version 2). Unfortunately, the only documentation I have for the word processor are two on-line help screens. The final version will have additional help screens but for now I've got to feel my way through the program. (If the program has a drawback it is that it remains a line editor — you can't go from the end of a line to the beginning of the next line by cursoring to the right.)

As you may recall, the word processor last month displayed the time in the lower right corner of the screen. This newer version displays not only the time, but the disk drive and the name of the file you are working on at the lower left. Also, there are now two cursors in the Edit mode. One is to indicate where you are in the text and the other is at the bottom of the screen, indicating your position in a line. (There is a line at the bottom of the screen marking each of up to 80 columns. It is identical to the line at the top of a TI-Writer screen which denotes left and right margins and tabs.) The cursor at the bottom of the screen can be a distraction when the other cursor is within three or four lines of it. It creates a mirror effect. However, Myarc tells me the lower cursor will be modified to eliminate or minimize the distraction.

But the upgraded word processor isn't the only new item. I now have a production board. It arrived via UPS and included three disks. They were labeled Advanced BASIC V (the version number was left off of the disk label), Myarc DOS Disk 1 and Cartridge Saver. TI-Word Processor Upgrade and Microsoft Multiplan

Review

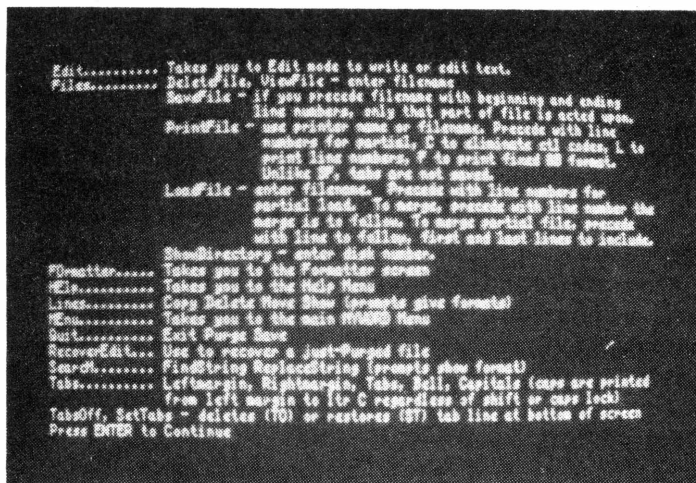
Upgrade. The production board is an enhancement of what I had been using and includes a set of external jumpers to set the Geneve for RGB or composite monitors.

Unfortunately, the board does not appear to include a boot ROM which I had expected. The operating system, such as it is, still boots out of a floppy and requires the user to load the SLVDP program prior to doing anything else. The prompt is still labeled DSK1 (instead of "A," which is what the manual says it should be labeled). It is possible to override this DSK1 prompt by entering a disk drive designator along with a program name, i.e. DSK2.FILENAME.

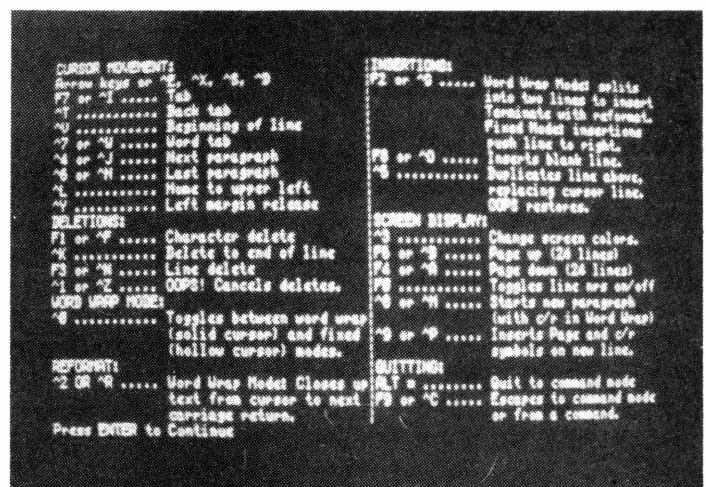
I won't dwell on these disks except to note that Advanced BASIC is actually Extended BASIC II Version 2.11 (it even says so on the title screen). The Myarc DOS is not an operating system in any sense that I understand the term. In no way does this disk reflect the operating system described in the documentation, which emulates MS-DOS. Of course, it is called Myarc DOS Disk 1. According to Myarc, the full DOS was to be available about the middle of May, too late to get it for this installment. In addition, the final version of My-Word was to be available at that time.

To update you, according to Myarc, M-DOS is the key to the Geneve. It will allow the Geneve to be used with the Myarc, CorComp or TI disk controllers, as well as the Horizon RAMdisk and CorComp's Triple Tech. The DOS will provide users with five operating speeds, one of which should be suitable for virtually any piece of TI99/4A software. (Right now I can operate the Geneve at only two speeds — slow and extremely fast.) The only exclu-

(See Page 30)



Help screen for My-Word



Help screen for My-Word Editor

GENEVE—

(Continued from Page 29)

sion would involve programs that use unusual keyboard routines, such as Terminal Emulator II. Programs that follow the standard TI keyboard procedures should work fine, I am told.

Last month I promised benchmark reports on the 9640's operation with TI and Wycove Forth. In view of the fact that I don't have M-DOS and can't really tell for sure how well either will run with the Geneve, I'll postpone these languages until June. Also, because the Multiplan enhancement needs M-DOS to execute read and write commands to floppies, I can't go into much detail about its operation. On operations that do not involve disk drives it has performed well, beating the 99/4A in both speed and ease of performance.

Advanced BASIC, as well, (not Extended BASIC II, was supposed to be released along with M-DOS, so I won't go into detail about BASIC. (A review of Extended BASIC II was published in the January 1987 edition.)

So where are we? I have the Geneve and it works well with a number of programs, particularly those which do not access disk drives. Games that I have tried, including such cartridge titles as TI Invaders, Personal Record Keeping, Extended BASIC, Editor/Assembler, Munch Man and Star Trek, work fine. These and most other cartridges (Milton Bradley MBX cartridges cannot be saved) may be saved with the CSAVE utility that comes with the Geneve or MG's GRAM Kracker. Cartridge software may

then be loaded into the Geneve using a GPL loader that comes with M-DOS Disk 1.

MORE ON CSAVE

The CSAVE utility is a nifty piece of software for those who do not have a GRAM Kracker or similar device. Anyone who purchased a GRAM Kracker simply to save cartridges will be amused at how cheaply the process can be accomplished. The CSAVE utility was done with the blessing of MG. The program was written by J. Peter Hoddie.

To use CSAVE (documentation is on disk and consists of 2 1/2 pages of D/V80 text), all you do is plug a cartridge into the GROM port of the 4A, select BASIC, enter CALL ILR and follow that with CALL LR("DSK1.CSAVE"). This loads the program. Then you are prompted to enter the drive number and filename of the cartridge you wish to save. The program then takes over. If the load is successful, you are returned to the title screen. If not, you get an error message and may try again. The most common cause of failure to load is a dirty GROM connector, according to Myarc.

The above loading procedure is for use with a Myarc disk controller. The documentation also includes sections on loading with a CorComp disk controller or a Horizon RAMdisk. It also offers tips on saving cartridges with a Navarone Widget or a Load Interrupt Switch. If using a TI disk controller, you may use Mini-Memory, E/A or the TI-Writer cartridge to load the CSAVE program. There are plenty of options to choose from.

I don't think I ought to carry this installment much further. The viability and utility of the Geneve depends on the Myarc Disk Operating System, which I have yet to receive. I am pleased with the 9640 to this point, but I have deliberately limited myself to the software I have used. There's no point in reviewing Multiplan if you can't access a disk drive nor is there any fair way to evaluate the My-Word word processor without the documentation. Also, the fact that some programs won't run with the Geneve at this point seems entirely due to the absence of M-DOS and not to a flaw in the card.

I am convinced that the 9640 works as it is supposed to. Now I am waiting to see what it can do. And I'll be able to write about that after M-DOS comes out.

I'm looking forward to it.

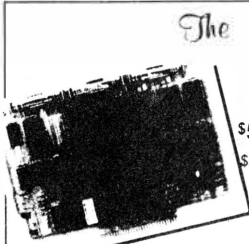
Disks not that cheap

Dropped lines from an article last issue made it appear that disks from Tigercub Software which sell for a reduced price of \$10 each were being sold for \$2 each.

The corrected version should read:

The four Tips from the Tigercub disks, and the 18 Tigercub collection disks, have been reduced to \$10 each postpaid. Individual programs have been reduced to \$2 each, plus \$1.50 per order for cassette or disk and postage (minimum order \$10).

For further information, or to order, write Tigercub Software, 156 Collingwood Ave., Columbus, OH 43213. MICROpendium regrets the error.



The HORIZON RAMDISK

192K RAM BATTERY-BACKED

\$53* PC Board, Manuals & Software

\$45* Five or more boards with one manual and set of disks.

* PARTS AVAILABLE ELSEWHERE FOR ABOUT \$100/720 Sector
* OHIO RESIDENTS ADD 5.5% SALES TAX

NOT JUST ANOTHER RAMDISK...

THE ONLY BATTERY-BACKED RAMDISK for the TI-99/4A. The on-card batteries recharge when you operate your computer. The batteries will last for years and the entire 192K RAM memory is battery-backed including the DSR RAMDISK Operating System.

THE ONLY FULLY OPEN PE-BOX CARD. The Horizon RAMDISK contains no EPROM or ROM. The DSR Operating System is in RAM and is loaded from a floppy disk. DOCUMENTED SOURCE CODE is provided for those who wish to understand AND MODIFY the Operating System.

THE ONLY PERIPHERAL WITH DSR RAM which allows the assembler language programmer to write Device Service Routines. The Horizon RAMDISK memory is decoded entirely within address space -4000 to -5FFF. A special loader (provided with SOURCE CODE) enables AORG Editor/Assembler object files to be placed in the RAM on the card. You can write all new CALL Subprograms for TI BASIC, power-up and interrupt service and DSR routines making use of the 192K battery-backed RAM. -4000 to -5FFF is always enabled and the remaining 166K is paged in 2K at a time in -5800 to -5FFF with the LDCR instruction.

THE ONLY RAM CARD YOU CAN BUILD your self at substantial savings over fully constructed models. You can buy the printed circuit board user's manual, Operating System software, and an ILLUSTRATED step-by-step construction manual with schematic and parts list and get the parts wherever you can find the best deals. Hundreds of TI enthusiasts have built the Horizon RAMDISK. If you've had any experience building electronic kits, you can too... at SIGNIFICANT SAVINGS! If you want a fully constructed tested and warranted unit, we sell these too!

EASY TO USE...

- > Functions just like a TI floppy drive, only FASTER! Load the operating system with a single key press, then access the RAMDISK as you would a floppy disk.
- > Compatible with software using standard DSR LNK including sector copy, Disk Manager II, MG Explorer, TI Writer, TI Multiplan and Editor Assembler. Compatible with TI BASIC, TI Extended BASIC, TI and Wycove FORTH, TI LOGO, and Assembly Language.
- > Comes with the DM-1000 Disk Manager. Loads from BASIC of Ext BASIC in 1 second with CALL DM.
- > Compatible with existing hardware including MAXIMEM, GramKracker, and the RAM/GRAM Card.
- > Accepts drive names from DSK1 to DSK6.
- > DIP switch sets CRU Base from -1000 to -1700.
- > Adds CALL Subprograms to BASIC to: 1) set the drive number, 2) set write protect, 3) set maximum sectors, 4) enable DSR for direct access, 5) execute M/VL code from BASIC. DELETE XBALL downloads CALLs to low 8K for execution from running Ext BASIC programs.
- > Comes with complete DSR SOURCE CODE. Explains how to write A/VL routines to enhance TI BASIC.

HORIZON COMPUTER LIMITED

P.O. Box 554
Walbridge, Ohio 43465

Technical Drive

Monty Schmidt on peripherals

By JOHN CLULOW

Getting the most out of the TI99/4A requires an in-depth knowledge of how the system works. Heiner Martin's *TI Intern* (reviewed August 1986) concerns the central software component of the system, console ROM and GROMs. Monty Schmidt's new book *Technical Drive* addresses the other major aspect of the 99/4A, its peripheral devices.

Technical Drive provides an in-depth explanation of the TI peripheral system and includes fully commented assembly language listings for the TI Disk Controller and RS232 cards, the CorComp 9900 Clock Card and the Device Service Link (DSRLNK) program used to access all peripheral expansion cards.

At least two important applications exist for the information provided in *Technical Drive*. Portions of the programs contained in peripheral devices (Device Service Routines or DSRs) can often be accessed directly, allowing the assembly language programmer to accomplish tasks easily which would otherwise be difficult or impossible.

For example, the book provides routines to access the CorComp clock directly on the 9900 Clock and Triple-Tech cards as well as routines to access the TI RS232 and PIO ports directly without using excessive VDP buffer space. From the information provided, the low level disk controller routines can also be used directly.

A detailed reference on the peripheral system is also of use to those who wish to write entirely new applications software for devices which contain DSR RAM, such as Mack McCormick's DSR/Clock card project and the Horizon RAMdisk. Power-up and interrupt service routines can be implemented in the DSR memory space, as well as routines which can be accessed with BASIC CALL and file statements (e.g., OPEN, CLOSE, DELETE). New applications can employ many of the same techniques used by TI.

The book begins with an overview of the TI peripheral expansion system focusing on the Communications Register Unit (CRU). It then shows how this concept is implemented in the DSRLNK routine.

Review

Report Card

Performance.....A
Ease of Use.....A
Documentation.....A
Value.....A
Final Grade.....A

Cost: \$17 (U.S. funds); 10% discount for purchases of three or more.

Manufacturer: RYTE Data, 210 Mountain St. Haliburton, Ontario, Canada K0M 1S0

Requirements: Knowledge of assembly language.

DSRLNK demonstrates some of the most fundamental aspects of the peripheral system, such as how the CRU base addresses are polled to locate the routine requested by the user.

Following this are the listings for the CorComp Clock card and the TI RS232 card DSR ROMs. Both are well commented. The routines provided after each listing are useful examples of the kinds of direct DSR access that can be done.

Over half of the book is devoted to the TI Disk Controller card. Before the extensive DSR listing, there is a very good description of the internal data structure used for floppy disks. The Volume Information Block, Directory Link and File Descriptor Record are covered along with the structure of the disk buffer area in VDP RAM.

There is also a description of each of the seven "low level" disk routines: sector read/write, format disk, modify file protection, rename file, transfer direct input file, transfer direct output file and buffer allocation. The CPU PAD locations used to specify parameters for each routine are provided, and with this information the routines can be directly accessed by assembly programs.

If you have ever looked at the Disk Controller code, you have no doubt seen the instructions BLWP @ >005A(R9) and BL

@>4658. They are used frequently throughout the DSR and can be a real source of confusion. It all makes sense, though, once you read Schmidt's explanation. Understanding these two instructions makes it much easier to follow the DSR code.

Technical Drive readers who wish to supplement the information in the book might consider *Fundamentals of Microcomputer Design*, published by the TI Learning Center. This book provides an even more detailed treatment of the CRU and also covers the TMS9902 UARTS used in the RS232 card. (It covers most other aspects of 9900 based systems as well, and I would highly recommend it.) A second reference, useful for those who want to study the disk system further, is the Data Sheet and Application Notes for the FD1771-01 Western Digital floppy disk controller chip.

In summary, *Technical Drive* is an important reference work for anyone pursuing a fuller understanding of the TI99/4A system. The program listings are well commented, and the accompanying text provides clear explanations of the principles involved.

Missouri TIBBS runs

The Orphan Board is a TIBBS in Republic, Missouri. Sysop is Jerry Campbell.

According to Leland Piper, news editor for the board, it carries news of the Ozark 99er User Group, reviews of new products for the TI, recipes and 60 to 100 downloads for Fast-Term and TE2 users.

Piper says the Orphan runs with a CorComp 512K RAM card, clock card, double-density controller and four DS/DD disk drives.

Piper says other assistants to Campbell are Greg Rogers, co-sysop, and Sharon Piper and Debbie Campbell, editors of the Recipe Corner section.

He says the board offers 24-hour service at (417) 732-7636.

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Console Calc

This spreadsheet just doesn't add up

By BILL GASKILL

Spreadsheets certainly are not new to the TI community. If you haven't followed their development for the 99/4A then take a look at the list below.

There are probably a couple of others that I haven't listed and there are some "spreadsheet-like" programs that aren't included in the list because they are task-specific applications rather than true spreadsheets.

The point is, the TI community has been more fortunate than most other orphan computer users in that several attempts have been made, by various authors, to provide us with an alternative to the Microsoft Multiplan spreadsheet that requires the Multiplan cartridge and 32K memory. The problem with the alternatives is that they are all too slow and too limited in their capabilities. Thus, if a 99/4A user really wants spread sheet power, he/she is still tied to the Multiplan program, which is itself pretty slow, but not nearly as limited as the alternatives.

Console Calc is another alternative that has vaulted into the limelight compliments of author Galen Read and marketer Bill Moseid of Data Biotics. This program is a module-based spreadsheet written in assembler or GPL (I can't tell which just by using the program) that boots up as fast as any module. It supports screen and text color changes and also takes advantage of memory expansion if you have it. The neat thing is that you don't need a memory expansion to use the program.

While it may be unfair to compare Console Calc to Multiplan, the fact is Multiplan is the standard for 99/4A spread-

Review

Report Card

Performance.....	C
Documentation.....	C
Ease of Use.....	B
Value.....	C
Final Grade.....	C

Cost: \$39.95**Manufacturer: DataBiotics**

Requirements: console, cassette or disk system, memory expansion and printer are optional

sheets just as TI-Writer is the standard for word processors. Thus, a comparison is inevitable. This is especially true since Console Calc is the first non-BASIC spreadsheet to appear for the 99/4A since Multiplan.

It is obvious that Console Calc is designed to provide machine code spreadsheet power to console-only users as well as users who use expanded memory. An overall comparison would be unfair since Console Calc is trying to appeal to a much broader user-base than Multiplan's "memory-expansion only" audience. However, certain functions common to spreadsheets will be compared.

Since Dan Bricklin wrote VisiCalc for the original Apple computer in the late 1970's, spreadsheets have flourished as a business-computer user's tool of choice. Witness the popularity of 1-2-3 by Lotus

Development Corp. They are also beginning to make in-roads in the home user's environment. As I see it, the popularity of spreadsheets comes from their ability to serve so many purposes and needs. They are used for everything from data-intensive applications, such as check registers or daily budget expenditure recorders, to money calculations and sales projectors. I have a friend who even does word processing with his spreadsheet.

Of course, spreadsheets are primarily designed to crunch numbers via user-defined formulas. Their "what if" capabilities are what make them so popular and versatile. Consequently, it is the ability to accept, interpret and compute formulas that or should be the back bone of any spreadsheet.

GENERAL OVERVIEW

In its "console" form, Console Calc supports 864 cells in a 28-row by 27-column format. With memory expansion, the spreadsheet grows to 2,500 cells in a 50 by 50 row/column configuration. (Multiplan supports 16,065 cells in a 255-row by 63-column configuration.) The main menu offers options to enter digit formats, erase the entire spreadsheet, enter a formula, goto a cell, load a spreadsheet, enter a number, print the spreadsheet, quit the program, perform a recalc of formulas, save a spreadsheet and enter text.

Operations supported that are not listed on the main menu include the ability to move from window to window, insert or delete a single character, clear an input field, change spreadsheet colors and enter common formulas with two keystrokes.

Operations that are not supported include cell width formatting, insertion of a blank row, formula printing and compressed printing of the spreadsheet and any type of relational operator functions.

DOCUMENTATION

Console Calc's documentation consists of a 12-page manual that contains 10 pages of information. One entire page contains a single illustration and the last page contains a warranty notice. Although the

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Spreadsheets for the 99/4A

PGM NAME	LANGUAGE	MEMORY	AUTHOR
99-CALC	XB	16K	PHIL BARNES
COUNT-SIL	XB	16K	SYSTEMS INTERFACE
MITI-CALC	BASIC	16K	MILO TSUKROFF
MULTIPLAN	E/A	32K	MICROSOFT CORP.
SNAPCALC	XB	16K	GARY STRAUSS
TI-99/4A CALC	BASIC	16K	GREGORY SCHMALHOFFER
TICALC	XB	16K	RAYMOND J. HEROLD

CONSOLE CALC—

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manual contains some typos, it is generally adequate for the novice user. One obvious error in the documentation stands out in the paragraph explaining how to print a spreadsheet. It tells you that if you press "Y" at the ROW/COL Y/N?, the row/column designators will not be printed. Pressing Y causes them to be printed with the spreadsheet.

EDITING FEATURES

Text formatting is limited to 12 characters of uppercase, lowercase or mixed case. All entries and formulas are edited simply by placing the cursor on the cell to be edited and then pressing the appropriate letter from the menu. For example, to edit an existing formula, simply move the cursor to the cell containing the formula, press F for formula and it appears at the base of the screen. Numeric formats can be set to 9 place accuracy behind the decimal point using the digit feature, but you must remember that this would only leave two places for the rest of the results. You cannot replicate a formula or text entry nor can you copy or move things about the spreadsheet. As mentioned above, insertion of a blank row is also not supported. Entry of any input requires that the ENTER key be pressed to assign the value or text to a desired cell. You cannot use the arrow keys to do it. An auto-repeat feature is provided for the cursor when holding down the arrow keys.

FORMULAS

Formulas are limited to a maximum of 12 digits including operators and row/column designators. Only logical operators are supported. Those supported include addition of one cell value to another, summing of a range of cells in a row or column, subtraction of one cell value from another cell value, division of one cell value by another cell value, multiplication of one cell value by another cell value, involution (the exponent of) of one cell value to the power of another cell value, Arc-Tangents, Cosines, Logarithms, Sines, Squares, Square Roots, and Tangents. Unfortunately, AND's OR's, NOT's and IF's are not supported.

LOADING/SAVING

Loading and saving operations are straight-forward and they adhere to nor-

mal 99/4A conventions, meaning that CS1 loads or saves to cassette 1 and DSK1 loads/saves to disk drive 1. An entire spreadsheet is saved each time SAVE is accessed. This includes all cells available, whether they are used or not. Files created in console-only memory will not load in expanded memory, at least not those created and then saved with cassette. Also, the cassette LOADING routine does not stop the tape player from running when end-of-file has been reached. Disk files are saved in DIS/FIX 128 format. I assume that cassette files are saved in DIS/FIX 192 format.

PRINTING

An entire spreadsheet is printed each time you access the PRINT option. While you may print a spreadsheet to disk or printer, you cannot print only a portion of the spreadsheet. Each page of print contains up to six columns (if the spreadsheet is that wide) and the maximum number of rows allowed by your memory appear on each page (28 for console-only memory, 50 for expanded memory). Columns past column six appear on page 2, columns past 12 on page 3, and so on.

Row and column designators can be included or omitted from the hard copy, but you must press the logical key choice to select the desired format. Don't go by what the documentation tells you to do. It is written exactly the opposite of what it should be. Formulas cannot be printed, or if they can I wasn't able to discover how.

ERROR TRAPPING

I have saved this topic for last because I feel that it is the single most important drawback in an otherwise interesting piece of software. Throughout my use of Console Calc I found that attempts at error trapping by the program caused it to lock-up, thus wiping out any changes made to the spreadsheet since the last save. Simple errors, such as forgetting to include the plus sign in a formula summing a series of rows or columns, would lock the program up with no error message being displayed. Another time, I blanked out a text entry in a cell by space-barring over it and then pressing enter instead of using FCTN 3. The screen showed a "VALUE TOO HIGH" error message and then locked up. This is a real shame because it

destroys the potential value of the application in my opinion. Formula entry errors are perhaps the most common errors made by spreadsheet users. To have such errors be fatal to the spreadsheet being used is fatal to the effectiveness and utility of the program.

CONCLUSIONS

I really wanted Console Calc to be a powerful program and I wanted to be able to give it a favorable review. Unfortunately I cannot. Several things keep me from doing so. While the program operates quite quickly thanks to the language it is written in, the size limitation on spreadsheets, even with memory expansion, is not sufficient for an average person's check register, even on a monthly basis. For all practical purposes, the 50-row limitation is to blame. Fewer columns and more rows would make it a more flexible application. As it is, one is limited to applications such as time value of money calculations, breakeven analysis, gas mileage calculations (which is the example spreadsheet in the documentation) and other non-data type spreadsheets. There simply isn't enough room in a spreadsheet to store multiple checks, budget expenditures or any other-recurring type of transaction.

The limit of 12 characters per formula is an insurmountable limitation to any serious spreadsheet users. The ability to design complex formulas is among the biggest advantages in using a spreadsheet. Console Calc's limitations tie one to creating only the simplest of formulas, both because of the size restrictions of the formulas and because of the lack of support for relational operators. I also noticed that sometimes a recalc had to be performed twice to get the correct results. It is nice to have all the fancy mathematics supported but, in my opinion, it would be even nicer to be able to create formulas that can make decisions via AND, OR, NOT, IF, etc.

Overall, I believe that Console Calc is a good start on a useful piece of software for the novice user. For advanced spreadsheet users it is not even in the ballpark and should not be considered as a contender. While I feel it is a little "pricey" for the TI community at \$39.95, about \$42

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Newsbytes

Address update for software author

John Birdwell, whose Disk Utilities program was reviewed in the March issue, notes that, though his mail is being forwarded, he has a new address.

New address for Birdwell is 7052 Springhill Circle, Eden Prairie, MN 55344.

Southern California TIBBS relocated

The Southern California Group of San Diego has relocated its TIBBS. New telephone number is (619) 278-8155.

The board operates 24 hours a day at 300 and 1200 baud. New sysop is Lutz Winkler.

Asgard changes product, number

Asgard Software announces version 1.2 of Schedule Manager.

Asgard also announces that it has a new telephone number as of May 1. The new number is (301) 559-2429.

The Schedule Manager program features a four-month appointment book, a 25-page notebook and a calander. According to the manufacturer, information from one area of the program can be used in another, with all functions accessed through pull-down menus and windows.

Chris Bobbitt of Asgard lists the following advantages of the new version over version 1.05:

—A SEE CALENDAR function that tells the user on the calendar itself which days have appointments on them.

—The PRINT SCHEDULE function allows the user to print a whole week of appointments at a time instead of just a day.

—The program “functions perfectly with Myarc Extended BASIC II, with only minor difficulties involving the graphic display that don’t damage the functionality of the program.”

—A utility allows the user to make changes in the default value section without actually running the program.

—The program loads and executes “around 300 percent faster.”

The update may be obtained by returning the original program disk and a check or money order for \$3 to Asgard Software, User Services, P.O. Box 10306, Rockville, MD 20850.

The upgrade includes a small manual addendum, according to the manufacturer.

Schedule Manager requires 32K, a disk system and TI Extended BASIC. It is unprotected and can be used with RAM disks. A printer is recommended. It retails for \$14.95 plus 75 cents shipping and handling.

Mid-South TIBBS has new number

Phone number for the TIBBS for the Mid-South 99 User Group of Memphis, Tennessee has changed to (901) 386-1760.

Gary Cox, secretary for the group, says the reason for the change is that the sysop for the board moved to another part of town.

Cox notes that first-time callers to the board should make their first call with TE2 or FAST-TERM in order to be recognized as TI users and have a TI access level.

He says the board is running on four double-sided, double-density drives, a CorComp controller, 512K memory, Triple Tech clock card, Ink Jet printer and a 300/1200 baud modem operating 24 hours a day.

P.U.N.N. schedules computer swap meet

P.U.N.N. (Portland Users of the Ninety-nine) has scheduled what organizers describe as “the largest single swap meet ever produced in the Pacific Northwest” from 8 a.m. to 6 p.m. June 27 at S.E. 12th and Taylor in Portland, Oregon.

Rich Hill, swap meet chairman, says the event is open to all makes of computers, especially the 99/4A, the 9640 and compatibles. He says user groups from “all over the Pacific Northwest” have been invited to participate.

For more information, call the P.U.N.N. BBS via PC Pursuit at (503) 233-6804, or contact Hill at 20319 S.W.

71st Ave., Tualatin, OR 97062 or via voice at (503) 692-3120.

Videotape for sale

The Front Range 99er Computer Club is selling videotapes of Craig Miller demonstrating Triton’s new Super Extended BASIC and the Turbo XT at their April 6 meeting.

Price is \$17.50 for non-members; for members, it is \$7.50 if picked up, \$10 if mailed.

Tapes may be ordered by leaving a message on VILLA-TI (303) 574-2567 or by sending a check or money order to Front Range 99er Computer Club, P.O. Box 9572, Colorado Springs, CO 80932.

GENie announces Canadian rates

GENie, General Electric’s telecommunications network, is now available to Canadian residents at a non-prime time rate of \$9.50 per hour Canadian funds through GE of Canada, according to Scott Darling, TI sysop on GENie.

A \$25 initial fee is charged to join the service, he notes. Fees are payable by MasterCard or Visa only (no checks).

Local GENie lines are available in Vancouver, British Columbia, (604) 437-7313; Calgary, Alberta, (403) 232-6121; Toronto, Ontario, (416) 535-9642; and Montreal, Quebec (514) 284-1348. Data Pac connection is not available to these lines, Darling notes.

To sign up for GENie via modem, he says, dial 1-800-638-8369 in half duplex mode. Type HHH at the connect and ENTER. At the U# prompt, type XJM11905,GENIE (Enter), and after a series of questions regarding the system being used, a sign-up menu will appear.

For further information, a voice line is available at 1-800-638-9636 from 8 a.m. to 1 a.m. Eastern time.

Newsbytes is a column of general information for TI99/4A users. It includes product announcements and other items of interest. The publisher does not necessarily endorse products listed in this column. Vendors and others are encouraged to submit items for consideration.

User Notes

Fast RAM for 99/4A

Merle Vogt, of Von Ormy, Texas, writes:

I don't know how many 4/A users are aware that the machines uses RAM memory that runs at two different speeds.

There are 128 words of RAM, using two Motorola MC6810 chips, in the console. These run at CPU speed and are called the "RAM PAD" in handbooks.

However, the attached external expansion RAM has its data multiplexed in and out of the console on an 8-bit pipeline. This runs much slower, taking 6 clock cycles per access, as against only 2 clock cycles per access for the console RAM.

I have added two more MC6810 chips inside a console, providing 128 more words of fast RAM.

Proceed as follows:

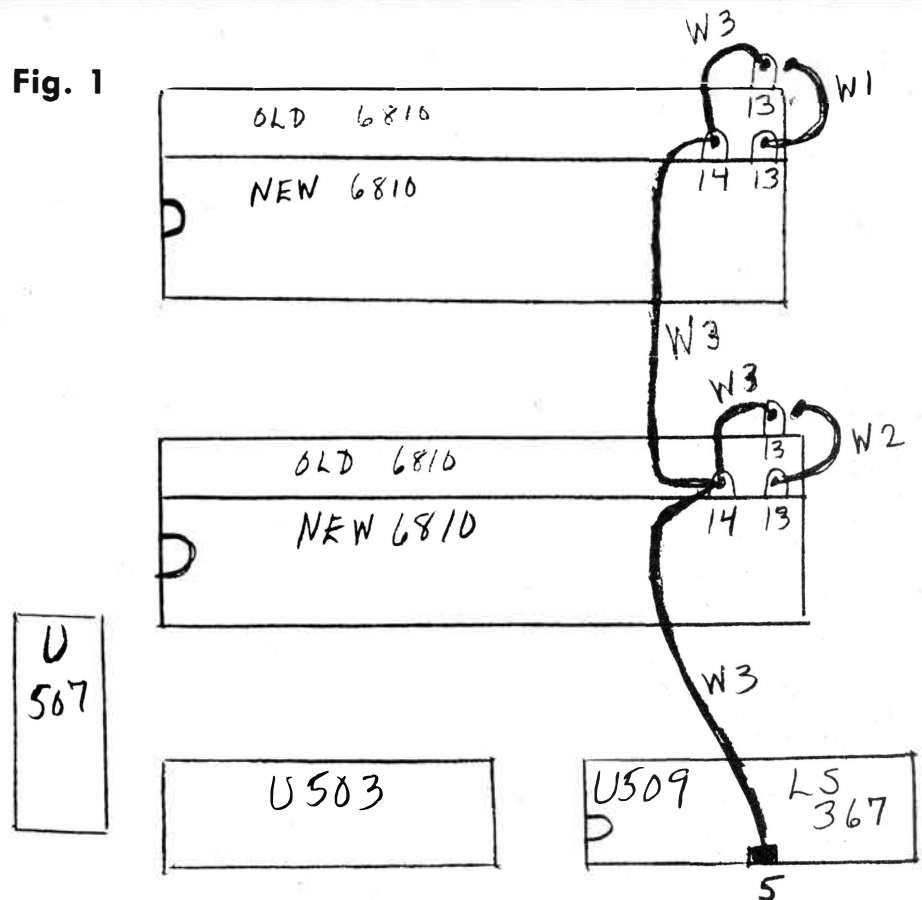
1. Buy two RAM chips, MC6810.
2. Open console, remove covers and gain access to the computer board.
3. Locate the 2 existing MC6810 chips, near the 9900 CPU chip.
4. Locate pin 13 on the 6810 chips (on one corner), solder-suck the connection to free up pin 13, then pull it out of its hole, at each chip, and bend it out flat. You may have to clip off the point of the pin to clear. Be careful, there is little space to work in and, if you break off the pin, you will have to pull the entire chip, a nasty job.
5. Put a 1/2 inch jumper into each pin 13

CONSOLE CALC—

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when all is said and done, it may meet the needs of a few users. The version that I tested was version 1.0. The documentation illustration shows V1.1 on the screen. I don't know whether I purchased an out-dated program. When I called Triton in San Francisco they gave me the DataBiotics phone number. After half a dozen tries at that number I got an answer from some other company that shares the number with DataBiotics. The person I talked to told me to call back between 12:30 and 1 p.m. California time to contact anyone from DataBiotics. Some support, huh? It's beginning to look like I've got another \$40 "dust collector" to add to my closet shelf.

Fig. 1



hole. Be sure it is kept all clear of chip pin 13. (See Fig. 1, W1 and W2.)

6. Take new chips, bend out flat pins 13 and 14 and clip off the points.

7. Piggy-back the new chips onto the old 6810 chips. Use a low wattage soldering iron with a pencil point. Solder pin Nos. 1 through 12, and pins Nos. 15 through 24 of top chips to bottom chips. Go slowly and be careful here. Don't overheat the chips, and spare the solder.

8. Using short jumper wires, tie together pin 13 of bottom chips to pin 14 of top chips. Then jumper together pin 14 of the two top chips, and extend over to pin 5 of chip U509, a 74LS367 buffer. This feeds address bit A7 to the RAM chips. (See Fig. 1, W3.)

9. Still hanging are pin 13 of the top chips. To these connect the W1 and W2 jumpers liad in at step 5.

10. Recheck everything, reassemble system and turn it on. Things should run as normal as the screens come up. Access to the new RAM is from assembly or Extended BASIC.

Here is what has been done: As built, the fast RAM responded to address 83XX, also 82, 81 and 80. 83XX is used by 4/A software. By picking up address bit A7 and tying to pins 13 and 14 we have:

When A71 things are as original, RAM block 83XX is accessed.

When A70 then RAM block 82XX is accessed.

So, what good is it? It runs three times faster than expansion RAM. It's a fine place to put fast-moving work space registers. It could be used for short program subroutines if fast speed is needed. It does not seem to effect any other machine functions. The drawback is that any programs set up to run in this 82XX space will not run on any unmodified machine.

Speeding up Techie

This comes from Joe Nuvolini Jr., of Colorado Springs, Colorado.

For those Techie (BBS) Sysops who have run out of memory while adding goodies to their BBS, I found a way to save

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User Notes

(Continued from Page 35)

memory space and speed up the board in the process. I took virtually all of the text out of the main program, BOARD, and built an array file, VARS, with all of the text phrases in it. The program, as written by Monty Schmidt, used very little of the stack memory where variables are written. I wrote the program below to create and maintain the file of variables.

In the BOARD program, I added line 92.

```
92 OPEN #9:"DSK1.VARS",RELATIVE,INTERNAL,
  FIXED 50 :: INPUT #9,REC 0:A :: FOR I=1 TO A ::
  INPUT #9,REC I:M$(I) :: NEXT I :: CLOSE #9
```

After all the variables are loaded into the stack I just call them up, e.g., CALL LINK("C",M\$(1)), which happens to be "Press enter to begin." I even included the title screen and the menu in the variable file so now, once the program is booted, the variables are read directly out of memory which makes the menu, etc. run much faster. A FOR NEXT loop will quickly bring up your title screen or menu. I was able to get 167 variables in the array before the stack filled up.

I hope you Sysops find this idea useful.

```
100 ! Program to create and
    maintain variables file
110 DIM M$(200)
120 DISPLAY AT(4,1)ERASE ALL
  : "Variable Maintenance Program"
130 DISPLAY AT(11,1): "Press:
  1 For entry
  2 For review
  3 Update a variable
  4 Update record 0"
140 CALL KEY(0,K,S):: IF S=0
  THEN 140 :: IF K<49 OR K>53
  THEN 140 :: Q=K-48
150 ON Q GOTO 160,310,520,630,710
160 CALL CLEAR :: OPEN #1:"D
  SK1.VARS",RELATIVE,INTERNAL,
  FIXED 50
170 INPUT #1,REC 0:A
180 A=A+1
190 PRINT "Input string: (C/
  R to abort)": :
200 PRINT "VAR #";A;": "
210 LINPUT "-----
  -----"
  " : Z$
220 IF Z$="" THEN 300
230 PRINT #1,REC A:Z$
```

```
240 PRINT #1,REC 0:A
250 PRINT
260 INPUT "More strings?":YN$
270 IF YN$="N" OR YN$="n" THEN 300
280 A=A+1 :: PRINT
290 GOTO 200
300 CLOSE #1 :: GOTO 120
310 CALL CLEAR :: OPEN #1:"D
  SK1.VARS",RELATIVE,INTERNAL,
  FIXED 50
320 INPUT "          Printed co
  py?"          ENTER to a
                " : NY$
330 IF NY$="" THEN CLOSE #1
  :: GOTO 120
340 INPUT "Begin at var # (1
  for all)": : Q
350 PRINT
360 IF NY$="Y" OR NY$="y" THEN
  EN P=1
370 IF P=1 THEN OPEN #2:"PIO
  /1"
380 INPUT #1,REC 0:A
390 FOR I=Q TO A
400 J=J+1
410 INPUT #1,REC(I):M$(I)
420 PRINT "M$(";I;") : " : M$(I)
  ): :
430 IF P=1 THEN PRINT #2:"M$
  (";I;") " : M$(I)
440 IF J<>55 THEN 470
450 IF P=1 THEN PRINT #2:CHR
  $(12)
460 J=0
470 NEXT I
480 INPUT "Press ENTER for m
  enu":R$
490 CLOSE #1
500 IF P=1 THEN CLOSE #2
510 GOTO 120
520 CALL CLEAR :: OPEN #1:"D
  SK1.VARS",RELATIVE,INTERNAL,
  FIXED 50 :: INPUT #1,REC 0:A
530 INPUT "REC # to correct
  ":RN
540 IF RN<1 OR RN>A THEN CAL
  L CLEAR :: GOTO 620
550 INPUT #1,REC RN:C$
560 PRINT
570 PRINT "Old phrase :":C$:
  :
580 PRINT
590 LINPUT "New phrase <ENTE
  R>=No change-----
  -----"
  " : D$
600 IF D$="" THEN 620
610 PRINT #1,REC RN:D$
620 CLOSE #1 :: GOTO 120
630 CALL CLEAR :: OPEN #1:"D
  SK1.VARS",RELATIVE,INTERNAL,
  FIXED 50
640 INPUT #1,REC 0:A
```

```
650 PRINT "REC 0 is :":A: :
660 INPUT "New REC 0 (ENTER
  to abort)": :B$
670 IF B$="" THEN 700
680 C=VAL(B$)
690 PRINT #1,REC 0:C
700 CLOSE #1 :: GOTO 120
710 CALL CLEAR :: END
```

Multipan NAME is useful

David V. Erickson of San Jose, California, offers some advice for users of Microsoft Multipan:

Multipan's powerful NAME feature can be used with very descriptive elaborate names. The difficulty comes when you need to use those names frequently to move the cursor. This can be speeded up by using single-letter names. The program also recognizes lowercase entries equally with uppercase ones, so that it isn't necessary to use the shift or alpha lock keys.

In order to have the effect of a "carriage return" key when making serial entries in your spreadsheet, use the following procedure:

COMMAND: select Go

GOTO: select Name (or enter)

GOTO name: enter name of column, space, r (or R)

The cursor will remain on the current row in the named column. Then use the down arrow (FCTN X) to go to the next line. The r could be suffixed with [1+] etc., to get to another relative row, but involves more typing than the down arrow (FCTN X). Without the r (or R), the cursor will end up at the top of the named column instead of the current row. By using a row name in place of a column name and c (or C) in place of r, this whole idea is orthogonally reversed.

Find those variables with Cross-ref

Chuck Reinhart of Bellaire, New York, has provided a utility that produces a cross-referenced printout of variables by line number. This utility is useful when analyzing a program and to keep track of which lines reference which variables. Reinhart

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User Notes

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says "there are no restrictions on the length of the program line or the size of the program."

Programs to be run through Cross-ref must be saved in MERGE format (SAVE DSKX.PGMNAME,MERGE). Then set up the printer and run Cross-ref. At the first prompt, enter the name to give to the printout. The next two prompts will request the disk drive number and the program name. Cross-ref supports the Foundation 128K card and any RAMdisk, according to Reinhart. Cross-ref requires a memory expansion, Extended BASIC, disk system and a printer.

```
100 REM 'SAVE DSK3.CROSS-REF5
110 CALL CLEAR :: DISPLAY AT
(2,9):"C R O S S" :: DISPLAY
AT(5,5):"R E F E R E N C E"
:: DISPLAY AT(8,7):"U T I L
I T Y"
120 DISPLAY AT(14,2):"*** YO
U MUST FIRST LOAD YOUR": : "P
ROGRAM TO DSKX USING THE": :
"MERGE COMMAND" :: INPUT "PR
OGRAM TITLE: ":A$
130 DISPLAY AT(23,2)ERASE AL
L:"INPUT FILE: DSKX." :: ACC
EPT AT(23,17)SIZE(-1)VALIDAT
E("X,1,2,3")BEEP:Z$ :: ACCEP
T AT(23,19)SIZE(10)BEEP:B$ :
: IF B$="" THEN 130 :: Z$="D
SK"&Z$&".
140 B$=Z$&B$ :: CALL CLEAR :
: OPEN #1:B$,INPUT :: C$=Z$&
"A" :: OPEN #2:C$,OUTPUT,INT
ERNAL,VARIABLE 200 :: PRINT
"COPYING...";
150 IF EOF(1)THEN 160 :: LIN
PUT #1:D$ :: PRINT #2:D$ ::
GOTO 150
160 CLOSE #1 :: CLOSE #2 ::
DELETE B$ :: PRINT :: DIM E$
(425),F$(425):: F=425 :: B$=
Z$&"A"
170 OPEN #1:B$,INPUT ,INTERN
AL :: C$=Z$&"B" :: OPEN #2:C
$,OUTPUT,INTERNAL,VARIABLE 2
54 :: K$="<MAIN>" :: GOSUB 2
90 :: PRINT : "PROGRAM UNIT:"
;K$ :: : "ANALYZING LINE ";:
: G=0
180 IF EOF(1)THEN 300 :: INF
```

```
UT #1:D$ :: H=ASC(SEG$(D$,1,
1))*256+ASC(SEG$(D$,2,1))::
IF H=65535 THEN 300
190 G=G+1 :: Q$=STR$(H):: FO
R I=1 TO LEN(Q$):: CALL HCHA
R(23,17+I,ASC(SEG$(Q$,I,1)))
:: NEXT I :: W$=SEG$(D$,1,2)
:: GOSUB 420 :: GOTO 180
200 CLOSE #1 :: PRINT STR$(G
);" PROGRAM LINES." :: DELET
E B$
210 PRINT : "COMPACTING TABLE
...": : P=0 :: FOR Q=1 TO F
:: IF F$(Q)="" THEN 230 :: P
=P+1 :: IF P=Q THEN 230 :: Q
$=E$(Q):: IF ASC(Q$)<9 THEN
220 :: Q$=CHR$(9)&SEG$("
",LEN(Q$),5)&SEG$(Q$,2,5)
220 E$(P)=Q$ :: F$(P)=F$(Q):
: E$(Q)="" :: F$(Q)=""
230 NEXT Q :: PRINT :STR$(P)
;" TABLE ENTRIES." : "SORTIN
G...": : S=1
240 S=S*3+1 :: IF S<P THEN 2
40
250 S=INT(S/3):: FOR Q=1+S T
O P :: Q$=E$(Q):: Z$=F$(Q)::
FOR L=Q-S TO 1 STEP -S :: I
F E$(L)<Q$ THEN 270
260 E$(L+S)=E$(L):: F$(L+S)=
F$(L):: NEXT L
270 E$(L+S)=Q$ :: F$(L+S)=Z$
:: NEXT Q :: IF S>1 THEN 25
0
280 PRINT "SORTED." : "SAVIN
G...": : PRINT #2:K$,P :: FO
R Q=1 TO P :: F$(Q)=SEG$(F$(
Q),1,250-LEN(E$(Q))): : PRINT
#2:E$(Q),F$(Q):: NEXT Q ::
PRINT "SAVED." :: RETURN
290 PRINT "INITIALIZING...";
:: FOR Q=0 TO P :: E$(Q),F$(
Q)="" :: NEXT Q :: PRINT "IN
ITIALIZED." :: RETURN
300 GOSUB 200 :: CLOSE #2
310 PRINT : "CROSS REFERENC
E PRINTER": : : OPEN #2:"PI
O" :: OPEN #1:C$,INPUT ,INT
ERNAL,VARIABLE 254 :: N=1 ::
PRINT #2:TAB(15);CHR$(14);A$
:: J=63-LEN(A$): : FOR I=1 T
O 9 :: READ R$(I): : NEXT I
320 IF EOF(1)THEN CLOSE #1 :
: CLOSE #2 :: DELETE C$ :: P
RINT : "* COMPLETE *" :: END
```

```
330 INPUT #1:K$,P :: GOSUB 3
90 :: PRINT #2:"PROGRAM UNIT
";K$,G;"PROGRAM LINES",P;"T
ABLE ENTRIES" :: H=8 :: L=0
:: FOR K=1 TO P :: INPUT #1:
W$,N$ :: IF L=ASC(W$)THEN 35
0 :: L=ASC(W$):: IF L>4 AND
L<>9 THEN GOSUB 410
340 PRINT #2: : " ";R$(L);C
HR$(13);SEG$("
",1,LEN(R$(L))+1):: H
=H+3 :: GOSUB 380
350 W$=SEG$(W$,2,16):: IF SE
G$(W$,LEN(W$)+(LEN(W$)>1),2)
<>"00" THEN 360 :: GOSUB 380
360 PRINT #2: " ";W$;TAB(15);
: : GOSUB 560 :: GOSUB 380 ::
IF K=P THEN I=1 :: GOTO 320
370 NEXT K
380 PRINT #2 :: H=H+1 :: IF
H<60 THEN RETURN ELSE N=N+1
:: PRINT #2:CHR$(12)
390 IF I=1 THEN I=0 :: RETUR
N ELSE PRINT #2:TAB(J);A$;"/
";STR$(N);: : : H=4 :: RETU
RN
400 DATA STRING ARRAYS,NUMER
IC ARRAYS,STRING VARIABLES,N
UMERIC VARIABLES,,,,,LINE RE
FERENCES
410 P=P-1 :: INPUT #1:W$,N$
:: L=ASC(W$):: IF K=P THEN I
=1 :: GOTO 320 ELSE IF L=9 T
HEN RETURN ELSE 410
420 FOR I=3 TO LEN(D$)-1 ::
J=ASC(SEG$(D$,I,1)): : IF J>1
28 THEN 480 :: IF J=0 THEN 5
50
430 FOR K=I+1 TO LEN(D$)-1 :
: J=ASC(SEG$(D$,K,1)): : IF J
<32 OR J>128 THEN 450
440 NEXT K
450 N$=SEG$(D$,I,K-I):: L=2-
2*(J<>183)+(SEG$(N$,LEN(N$),
1)="$"): : I=K+(L>2): : N$=N$&
SEG$("()",1,-2*(L<3))
460 K=9*ASC(N$)-431 :: N$=CH
R$(L)&N$ :: FOR Q=1 TO F ::
IF E$(K)=N$ OR E$(K)="" THEN
E$(K)=N$ :: GOTO 490
470 K=1-K*(K<F): : NEXT Q ::
PRINT : "TABLE FULL!" :: BREA
K
480 IF ABS(J-200)<2 THEN 520
(See Page 38)
```

User Notes

(Continued from Page 37)

```

:: K=J+272 :: IF K=403 THEN
RETURN ELSE IF K=433 THEN G
OSUB 210 :: GOSUB 290 :: N=-
1
490 IF K>400 THEN 510 :: O$=
F$(K):: IF O$="" THEN 500 ::
IF SEG$(O$,LEN(O$)-1,2)=W$
THEN 510
500 F$(K)=O$&W$ :: GOTO 550
510 IF K=426 OR K=419 THEN R
ETURN ELSE 550
520 IF J=201 THEN 540 :: J=A
SC(SEG$(D$,I+1,1)):: IF N TH
EN K$=SEG$(D$,I+2,J):: N=0 :
: PRINT "PROGRAM UNIT:";K$:
: "ANALYZING LINE ";Q$
530 I=I+1+J :: GOTO 550
540 N$=STR$(ASC(SEG$(D$,I+1,
1))*256+ASC(SEG$(D$,I+2,1)))
:: L=9 :: I=I+2 :: GOTO 460
550 NEXT I :: RETURN
560 FOR Q=1 TO LEN(N$)-1 STE
P 2 :: IF Q-18*INT(Q/18)<>1
OR Q=1 THEN 570 :: GOSUB 380
:: PRINT #2:TAB(15);
570 Q$=STR$(ASC(SEG$(N$,Q,1)
)*256+ASC(SEG$(N$,Q+1,1)))::
Q$=SEG$(" ",LEN(Q$),6)&
Q$ :: PRINT #2:Q$:: NEXT Q
:: RETURN

```

Information retrieval program

Charles Kirkwood, of Clemson, South Carolina, thinks he has the answer to a reader's question. He writes:

In the Feedback section of the June 1986 issue of MICROpendium there was a letter by the Rev. George Price, entitled "Word processor, data base cross sought," in which he says he wants to file stories and quotes under subject headings. This is a form of information retrieval that is used by large libraries for researchers to locate articles in periodicals. Key words are input to the retrieval program. All extracts are printed that have key word matches with words in the titles stored. The more key words used, the fewer extracts will be printed. The program could be written in several ways. However, I believe the enclosed short, Extended BASIC program will work nicely for what

he wants.

The subject headings in this program are stored in DATA statements. The location, disk and subject, are typed first and followed by a space. Then the subject heading is typed (probably better to use all caps). The first DATA statement will contain a number — the number of DATA statements (i.e. subject headings) that follow. Sample DATA statements, which may be removed, are included with the program.

Store the quotes and stories on the diskette in separate files with the disk and subject agreeing with the subject heading in the DATA statements. These may be stored using the edit program of the Editor/Assembler or a word processor in variable 80 format. Or a short program could be written in Extended BASIC to store the files.

A word about line 60. Generally, the number typed for KM will be the same as the number of key words. For example, if KN is 4 and KM is also 4, all key words must be present in the subject heading. However, if KN is 4 and KM is 3, then any 3 out of the 4 key words need to match the words in the subject heading.

```

10 OPEN #2:"PIQ"
20 DIM KW$(10)
30 PRINT "INFORMATION RETRIE
VAL BY CHARLES KIRKWOOD,
BOX 1241, CLEMSON, SC 29633"
40 PRINT :: INPUT "NUMBER OF
KEYWORDS ":KN :: PRINT
50 FOR I=1 TO KN :: INPUT "I
NPUT KEYWORD ":KW$(I):: NEXT
I
60 PRINT :: INPUT "NUMBER OF
KEYWORD MATCHES REQUIRED?
":KM :: PRINT
70 READ N
80 FOR I=1 TO N
90 KT=0
100 READ X$
110 FOR J=1 TO KN
120 X=POS(X$,KW$(J),1)
130 IF X>0 THEN KT=KT+1
140 NEXT J
150 IF KT>=KM THEN GOSUB 190
160 NEXT I
170 PRINT :: INPUT "RERUN? (
Y/N) ":R$
175 IF R$="Y" THEN RESTORE :
: PRINT :: GOTO 40

```

```

177 CLOSE #2 :: END
180 REM PRINT SUBROUTINE
190 D=POS(X$," ",1)
200 D$=SEG$(X$,1,D-1)
210 PRINT #2 :: PRINT #2 ::
PRINT #2:SEG$(X$,D+1,LEN(X$)
):: PRINT #2
220 OPEN #1:D$,INPUT ,VARIAB
LE 80
230 LINPUT #1:IL$
240 PRINT #2:IL$
250 IF EOF(1)<>0 THEN CLOSE
#1 :: PRINT :: RETURN
260 GOTO 230
270 DATA 8
280 DATA "DSK1.A1 GENEVE FRO
M MYARC MAKES DEBUT AT CES"
290 DATA "DSK1.A2 SUBROUTINE
S PROVIDE SUPPORT FOR 3D GRA
PHICS, CAD"
300 DATA "DSK1.A3 MAKE NO MI
STAKE: EXTENDED BASIC KNOWS
HOW TO HANDLE ERRORS"
310 DATA "DSK1.A4 BASIC/XBAS
IC, SELF-MODIFYING PROGRAMS"

```

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